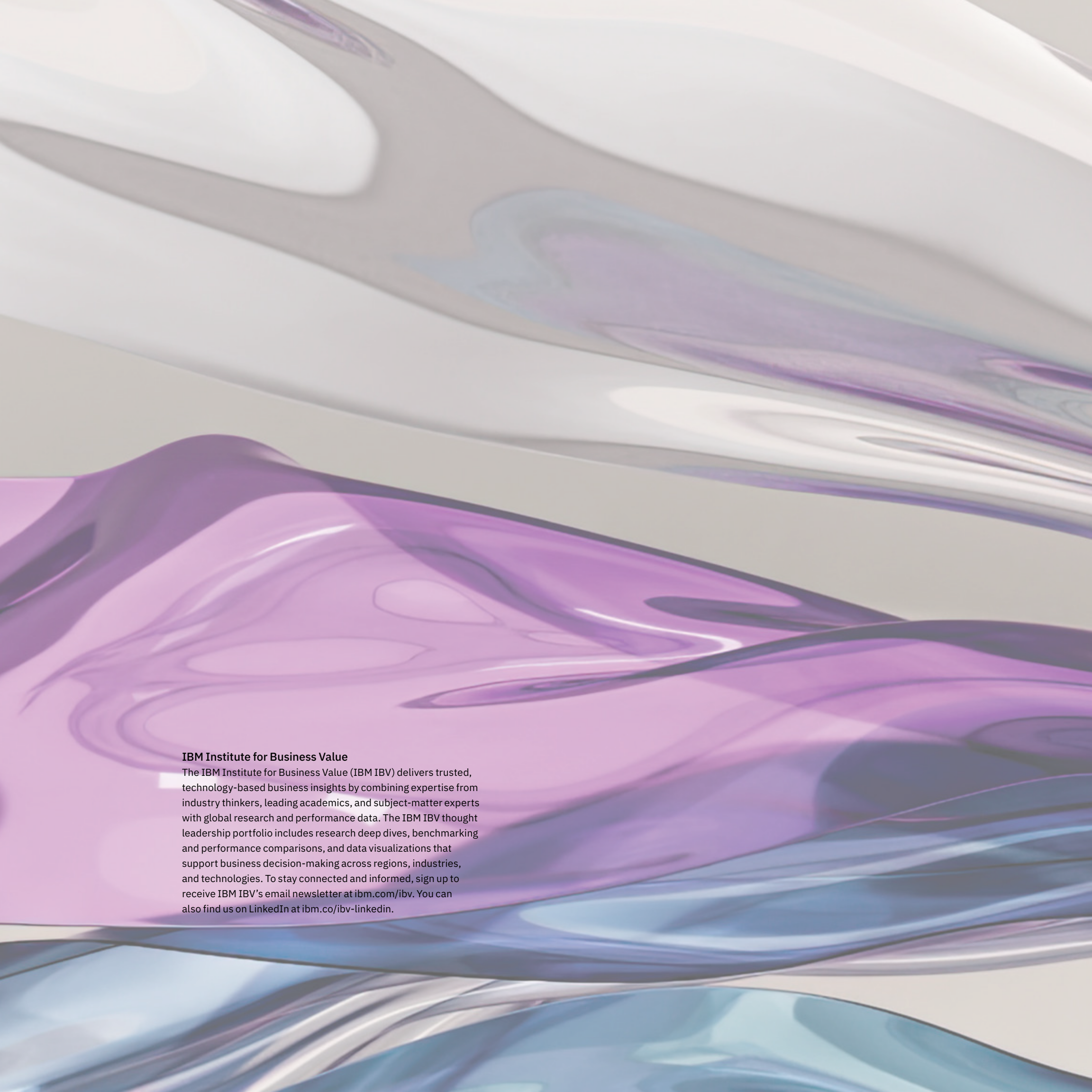


IBM Institute for  
Business Value

The CEO's  
**Guide to  
Generative AI**

What you need to know and do to win  
with transformative technology

**IBM**



**IBM Institute for Business Value**

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The CEO's  
**Guide to  
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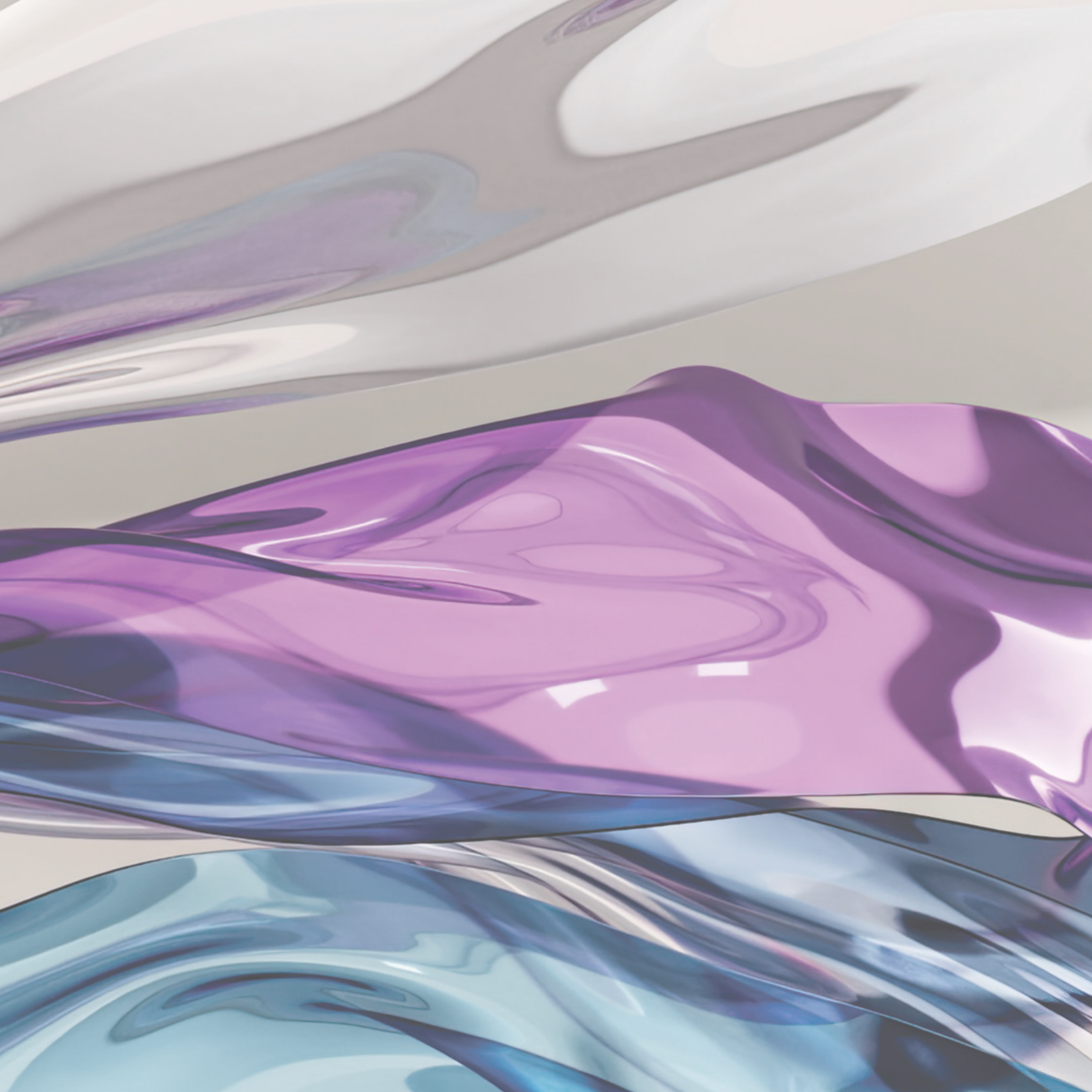
What you need to  
know and do to win  
with transformative  
technology

## The CEO's Guide to Generative AI

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Will the  
next industrial  
revolution be  
defined by  
generative AI?



**Jonathan Adashek**

Senior Vice President  
Marketing and  
Communications, and  
Chief Communications Officer  
IBM



**John Granger**

Senior Vice President  
IBM Consulting



**Salima Lin**

Senior Partner and  
Vice President  
Strategy, Transformation,  
and Thought Leadership  
IBM Consulting



**Rob Thomas**

Senior Vice President  
Software and Chief  
Commercial Officer  
IBM



**Joanne Wright**

Senior Vice President  
Transformation  
and Operations  
IBM Finance and  
Operations



**Kareem Yusuf**

Senior Vice President  
Product Management  
and Growth  
IBM Software

## Foreword

CEOs are used to being in the hot seat. Only the toughest problems land on their desks—and how those problems are solved often defines an organization’s future.

Generative AI is a defining moment. In the next industrial revolution, making the right investments in this emerging tech and empowering people with skills to work creatively, productively, and responsibly with generative AI will create a multiplier effect for businesses. But the wrong bets could open the door to data privacy concerns, legal liabilities, and a whole host of ethical issues.

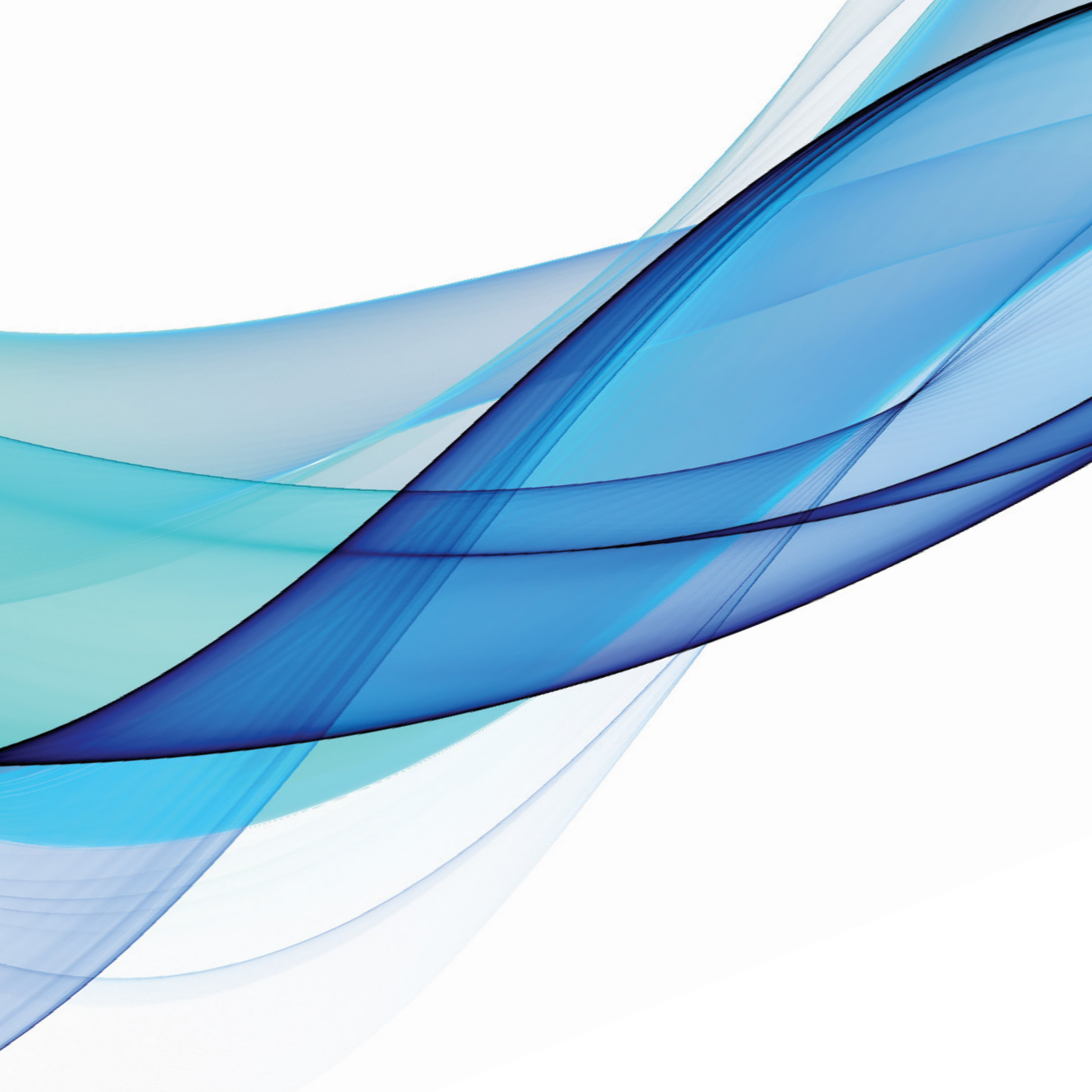
What will help CEOs accelerate the adoption of generative AI? How can they scale safely and responsibly?

IBM’s long history of using technology to make the world work better puts us in a unique position to help CEOs answer these tough questions. This book captures the insights we have collected from primary research, as well as direct CEO conversations and use case pilots with their teams as they navigate the generative AI opportunity. This follows decades of engagement with clients as we have worked with them to apply AI and drive meaningful change for their businesses.

We’ve distilled our in-depth knowledge of this evolving technology—and the results of our rapid response research—into specific insights and actions CEOs can use in their businesses today. Throughout 2023, the IBM Institute for Business Value (IBM IBV) interviewed nearly 6,000 CEOs and other members of the C-suite globally about where they expect generative AI to make the biggest impact, how they plan to invest, and what obstacles they will need to overcome along the way.

Our findings paint the future in an auspicious light. They highlight a multitude of new challenges, but also showcase strategies that can help CEOs capitalize on the generative AI moment.

It’s an exhilarating time to be an executive. Like the titans who led the world through the last industrial revolution, we’re now charged with redefining human-machine partnerships. In this transformative time, CEOs must envision what the enterprise of the future will look like—and inspire their teams to make this vision a reality.







# Leadership can't be automated

Generative AI promises to fuel revolutionary innovation and transformative growth. But driving change demands personal intervention.


What does that mean for CEOs? It starts like any other major transformation—defining what the enterprise wants to achieve, ensuring those goals are tightly coupled with strategy, and defining actionable next steps.

Tactics are where things start to get tricky. In each area of the organization, leaders need to assess where work can be streamlined and augmented—and how generative AI can be used to deliver greater value every day. Data is an essential piece of the puzzle, but differentiating insights can only come from a human mind.

That's where the augmented workforce comes in. As AI ups its IQ, CEOs must rethink how work gets done. With generative AI assistants, employees can work faster—and fill multiple roles. Rather than playing a single instrument, each employee can conduct an orchestra.

The key is selecting use cases that drive value—and not spreading the organization too thin. Rather than looking broadly at applications and opportunities, CEOs should ask how generative AI can help solve the company's biggest problems today.

Employee experience. Customer service. Application modernization. Wherever transformation hits a stumbling block, generative AI may be able to clear the way.

The background of the page is an abstract, flowing design of various shades of blue, ranging from light sky blue to deep navy blue. The lines are smooth and organic, creating a sense of movement and depth. The overall aesthetic is clean, modern, and professional.

Of course, any transformative technology comes with its own risks. The proper oversight will be needed to correctly identify, quantify, and manage the risks that arise from adopting generative AI. However, 60% of organizations are not yet developing a consistent, enterprise-wide approach to generative AI.<sup>1</sup>

To keep transformation efforts focused—and produce innovations that will deliver business value—CEOs need to understand where generative AI is poised to make the biggest impact. But no matter how you choose to apply generative AI to people, operations, and data and technology, some truths remain constant. As you explore the following 12 chapters, packed full of potential applications and action items, keep three fundamentals of enterprise transformation top of mind:

**You are still the decider.** Despite advances in technology with the potential to inform decision-making, critical strategic decisions must still be made by strong leaders. In fact, 90% of CEOs expect their C-suite team to shape their organization's adoption of generative AI.<sup>2</sup> How this technology is implemented will amplify the good, the bad, and the ugly when it comes to governance, organizational culture, skills and capabilities, and technical maturity.

**Indecision will destroy speed to scale.** The experimentation phase for generative AI leaders will be short and intense, with 74% of executives reporting that generative AI will be ready for general rollout in the next three years.<sup>3</sup> Waiting until you have all the answers can eliminate your advantage—and give your competitors an edge.

**The next chapter remains unwritten.** More than four in five executives say generative AI will reinvent how their organization works.<sup>4</sup> This disruption creates dramatic new opportunities to make meaningful changes to capabilities and roles. But while generative AI changes what you can do, it should not change who you are.

We know you have questions about what comes next. What do you really need to know about generative AI—and what do you need to do today to stay ahead of the curve? Read on to learn how generative AI can redefine your customer and employee engagement strategies, accelerate enterprise transformation with data-driven tech, and build resilient operations for a future defined by disruption and change.



## Section 1

# AI-enabled people

Just as the assembly line changed the way factory workers made products, generative AI will transform knowledge work. In this section, we'll look at how CEOs can tap this technology to evolve talent and skills, customer service, and customer and employee experience.

Writing, coding, analysis, design—generative AI makes it all easier. It lets everyone get more done in a day—but that doesn't mean productivity gains will magically appear. Becoming an organization that is supercharged with AI-enabled people requires the full attention of the entire executive team.

Generative AI tools and resource investments need to be focused on the highest-impact and most practical use cases to optimize value for the organization and provide models for future priorities. Don't get distracted by 400 possible use cases for generative AI. Focus on the top five. Or three. And then scale ruthlessly.

As the traditional boundaries between humans and machines dissolve, CEOs must empower people to experiment while also protecting the business. It's a fine line, and every leader must walk it.

### Chapter 1 Talent and skills

A new frontier for  
the future of work

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### Chapter 3 Customer and employee experience

Experience  
is everything

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Generative AI  
won't replace people,  
but people who use  
generative AI will  
replace people  
who don't.

Generative AI will change how we work and what skills we need—and it's happening faster than we expect.

While workplaces have been in flux since the pandemic, change is about to become even more intense. Generative AI is redefining every job and every task, from entry level to the executive suite.

Leading organizations are acting now to rethink strategy and actions around talent and skills. Generative AI can become a new tech coworker. Enterprises that succeed will be those that build a flexible, thoughtful approach that encourages creativity, experimentation, and innovation, overcoming anxiety and rewarding enthusiasm, inclusivity, and optimism.

Chapter 1

**Talent and skills** + generative AI

# A new frontier for the future of work

**“I think [generative AI] is the most exciting advancement in technology, at least in my lifetime.”**

**Lidiane Jones**  
Former CEO of Slack



# Talent and skills

We've identified **three things** CEOs need to know and do right now.

## 1. People

### What to know

Generative AI is all about people—how work gets done.



### What to do

Make people, not technology, central to your generative AI strategy.

## 2. Expectations

### What to know

Most CEOs are overly optimistic about their organization's readiness for generative AI.



### What to do

Be specific in the application of generative AI and the benefits you expect.

## 3. Creativity

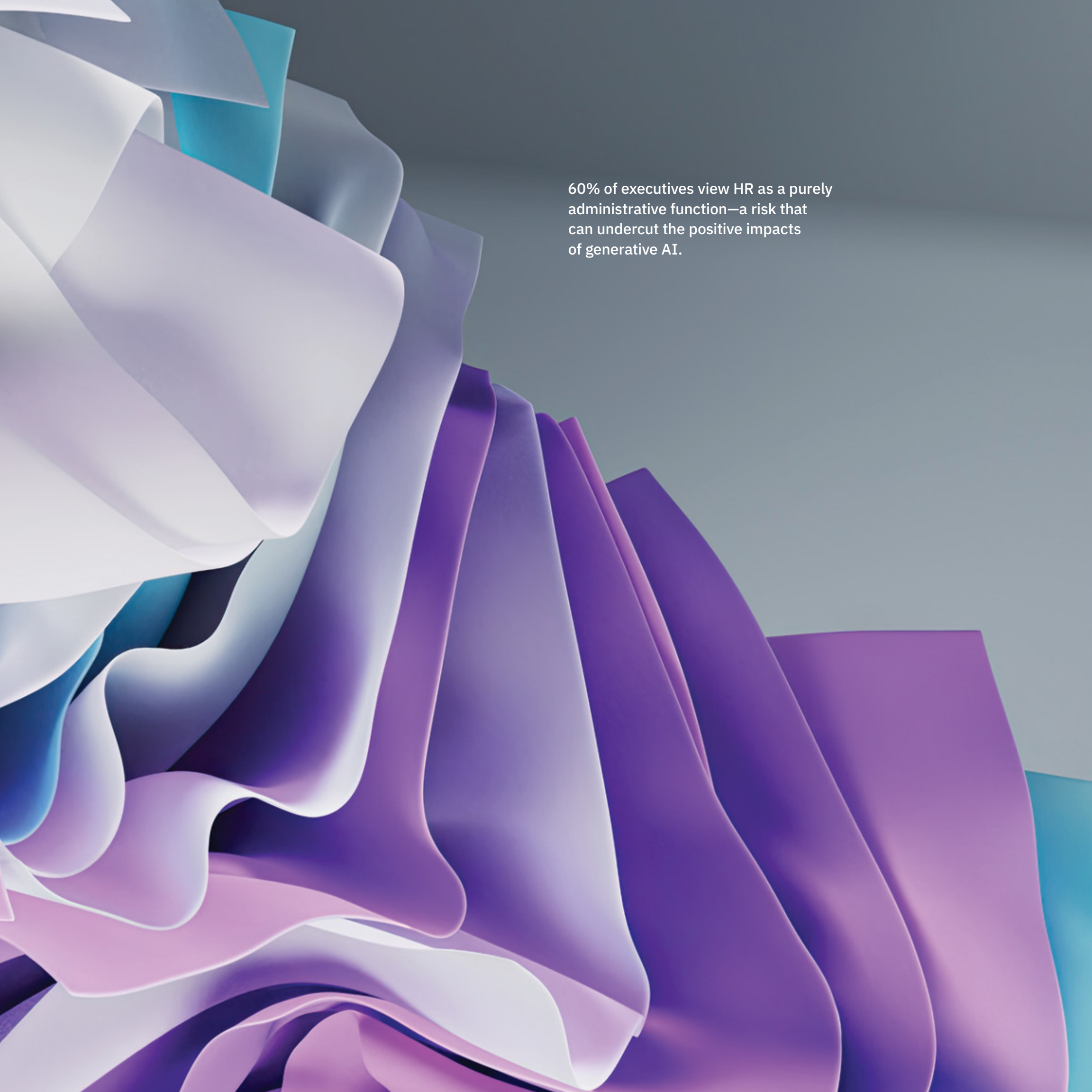
### What to know

Creativity is the “must-have” generative AI skill.



### What to do

Rethink your operating model to unlock creativity.



60% of executives view HR as a purely administrative function—a risk that can undercut the positive impacts of generative AI.

What you need **to know**

## Generative AI is all about people—how work gets done.

Unlike new technologies that are all about what machines can do, generative AI amplifies human capabilities. It streamlines creative work, from content creation to experience design, and automates repetitive tasks, from data analysis to code development.

Customer service agents can use generative AI to offload routine questions, allowing them to spend time on sales enablement. Coders can ditch mundane programming and focus on improving code quality and security. HR specialists can step back from day-to-day processing to focus on what really matters—growing talent.

Feedback loops are becoming near-instantaneous, opening the way to new, better business outcomes. But generative AI's impact doesn't happen in an abstract digital environment. Competitive advantage comes from scaling employee expertise and expanding organizational capabilities.

All of this should put HR at the center of organizational progress. Yet 60% of executives view HR as a purely administrative function, a risk that can undercut positive impacts from this revolutionary technology.<sup>5</sup>

Leaders who understand how to power their people with generative AI will be a force multiplier for their business. Half of all executives say generative AI will improve multiple aspects of their business, from decision-making to customer experience to revenue growth.<sup>6</sup>

What you need **to do**

## Make people, not technology, central to your generative AI strategy.

Generative AI isn't replacing people, but people who use generative AI are replacing people who don't. Bring your people along for the journey.

- **Elevate HR from purely administrative.** Your HR team will have a strategic role in building the generative AI-enabled workforce of the future. Start by reskilling the HR professionals who need to lead this effort.
- **Develop a formal, transparent, people-focused change management initiative** that identifies where generative AI testing and adoption is underway and provides continuous feedback to your people about use cases, successes and failures, and lessons learned.
- **But first, avoid buyer's remorse.** Make sure you have a model for the ethical use of generative AI, with clear standards, guidelines, and expectations, and share these with your people across the enterprise.

What you need **to know**

### Most CEOs are overly optimistic about their organization's readiness for generative AI.

74% of CEOs say their teams are appropriately skilled in generative AI, yet only 29% of their C-suite colleagues agree.<sup>7</sup> These disconnects can delay strategic shifts needed to propel your organization forward.

No role is immune to the impact of generative AI. 77% of entry-level workers will see their jobs shift by 2025—but so will more than one in four senior executives.<sup>8</sup> Over the next few years, the use of generative AI will dominate all roles and all levels across an organization.

Longstanding beliefs about what skills are most important are being questioned. If technical proficiency can increasingly be provided by generative AI, what capabilities will truly differentiate the most successful organizations?

What you need **to do**

### Be specific in the application of generative AI and the benefits you expect.

While enterprises should encourage their people to experiment, ensuring appropriate guardrails around data protection and ethics is essential.

- **Establish performance-based compensation and rewards** for your staff to maximize generative AI readiness.
- **Take an iterative approach to generative AI rollout** that encourages risk-taking and failing fast. Let teams identify and test their own generative AI opportunities—starting with HR.
- **Hold leaders from business, IT, and HR jointly accountable** for generative AI outcomes. It will help amplify teamwork and underscore the strategic importance of generative AI adoption across the enterprise, benefiting your organization as a whole.

“[Generative AI is] not replacing the worker. It’s *augmenting the worker*, and the worker ultimately becomes the pilot. A mobile device can be a copilot, an assistant. *But they still need us—us as humans.*”

**Bill Burns**

CEO of Zebra Technologies



What you need **to know**

## Creativity is the “must-have” generative AI skill.

You would think that a tech-based transformation requires more tech capability. But in this case, that’s not quite true. The skill executives say will be most valuable to their organizations by 2025 is creativity.<sup>9</sup>

And the thing about creative people? They’re clever. They will find productive ways of interacting with their generative AI “assistants,” as well as novel enhancements to how they will interact with their human colleagues. Executives say team building and collaboration skills are as important as software development and coding, and ahead of analytics and data science. But creativity leads the way.

What you need **to do**

## Rethink your operating model to unlock creativity.

Leaders can’t be afraid of shifts at the executive level. In fact, they should demonstrate openness to change by integrating generative AI into their own work.

- **Make generative AI upskilling an advancement opportunity** for everyone, especially top performers. Generative AI can’t augment or improve poor performance. It’s revolution not evolution. Pioneer the use of generative AI in the C-suite and at managerial levels.
- **Crystallize a culture of curiosity** to accelerate creativity. Make generative AI central to team building. Build a sense of employee equity. Use generative AI to create clear feedback loops where they don’t exist today and distribute learnings and insights that previously sat on a shelf in a binder.
- **Redefine ways of working** by using generative AI-augmented process mining to analyze how work is done, where bottlenecks and inefficiencies exist, and how to remediate them—including how decision-making can be accelerated and improved at scale.

**“Our objective is not to reduce workforce. We just want to let people spend their time more productively and more creatively, so that they can also be happier.”**

**Okuyama Hiroshi**

Director and Member of the Board,  
Chief Digital Officer of Yanmar Holdings Co., Ltd.

With generative AI,  
organizations can  
get the best of both  
worlds—automation  
+ humanity.



No single area of an organization provides a better foundation to demonstrate generative AI success than customer service.

The interplay between AI tools, human agents, and customers offers CEOs a distinctive opportunity to generate value while building operational proficiency in new ways of engaging.

Chapter 2

**Customer service +** generative AI

# From cost center to value creator

**“Go to the customer. Listen and talk to the customer. Explain your ideas to the customer and get some feedback.”**

**Kazz Kobayashi**

Corporate Officer, President of Ricoh Futures Business Unit  
Ricoh Company, Ltd.

# Customer service

We've identified **three things** CEOs need to know and do right now.

## 1. Strategy

### What to know

Customer service has leapfrogged other functions to become CEOs' number-one generative AI priority.



### What to do

Turn human agents into heroes by giving them generative AI tools.

## 2. People

### What to know

85% of execs say generative AI will be interacting directly with customers in the next two years.



### What to do

Use generative AI to learn more about your customers than you ever thought possible.

## 3. Experimentation

### What to know

Piloting generative AI in customer service can speed a successful enterprise-wide rollout.



### What to do

Exploit successes and learnings in customer service.

## What you need **to know**

### Customer service has leapfrogged other functions to become the C-suite's number-one generative AI priority.

In early 2023, executives told us research, innovation, marketing, and risk compliance were the most immediate and valuable use cases for generative AI. Just months later, customer service jumped to the top of the generative AI implementation list, cited by more C-suite executives than any other organizational function or service.<sup>10</sup>

In part, that's due to the pressure on CEOs to implement generative AI coming from all stakeholders. Almost half say they're feeling demands from customers to accelerate use of the new technology.<sup>11</sup> Customers want personalized answers, fast and without hassle, which means AI-powered customer service bots are not only useful; they're essential.

Executives recognize the power of generative AI to deliver transformation in customer service. They anticipate a long list of benefits, with shortened response times and improved overall customer experience at the top.<sup>12</sup>

But the path to all benefits starts with agents. Nearly two-thirds of executives (63%) say that by the end of 2023 they will have already invested in generative AI use cases to serve agents directly, including deploying generative AI for agent training and enabling agents to interact directly with tech applications to deliver improved instant assistance.<sup>13</sup>

## What you need **to do**

### Turn human agents into heroes by giving them generative AI tools.

Freeing up human agents so they can pivot to more personalized customer engagement—where it matters most—is one of the most immediate ways organizations can offer enhanced value to customers, differentiate their brand, and begin transforming customer service from a cost center into a revenue accelerator.

- **Prioritize use cases that improve the agent experience.**  
Obviously, automate laborious manual tasks. And let agents tap generative AI to answer questions about products and services and offer recommendations. Give agents quick and easy access to call transcriptions and summaries. Use generative AI for instant translations. And enable agents to access the tech for coaching based on their personal analytics.
- **Let generative AI manage standard customer interactions** and relay the more complex and sensitive queries to your human agents. Invest to create highly trained individuals and nurture them carefully. Along with empathy, ensure they have the business acumen to offer the top-tier service that can convert unhappy customers into brand loyalists.
- **Don't play "hide-and-seek" with your customers.**  
Tell them when they are engaging with a generative AI bot. And let them request human assistance at will, no questions asked.

“For me, it is all about  
the flow of data.

*People want  
information.*

How do we deliver that  
information to those  
customers in a way  
that’s meaningful for  
that individual?”

**Paul Graham**

CEO of Australia Post



What you need **to know**

## 85% of execs say generative AI will be interacting directly with customers in the next two years.<sup>14</sup>

By the end of 2023, more than 60% of execs expect to be using generative AI for optimization, including reviewing, testing, and training conversational AI.<sup>15</sup> It's high stakes when businesses are putting generative AI on the front line, where missteps with customers could be catastrophic for the brand.

It may be tempting to deploy generative AI with customers quickly, but it's essential that leaders understand the customer pain points generative AI can resolve best and apply what they learn from agent interactions. Some concerns already top of mind for executives: bot-based responses that are harmful or off-brand, issues with transparency or auditability, and compromised social responsibility goals.<sup>16</sup>

At least in its early learning phase, unsupervised generative AI has the potential to create less-than-ideal outcomes. People—and for customer service, that means agents—can provide the guardrails. Agents enhance what AI brings while acting as a backstop for AI-generated misinformation. And as the technology becomes more sophisticated, agents can forge the emotional connections with clients that can yield new insights and opportunities. It's about agents *plus* AI—a winning combination that can drive added value for the enterprise.

What you need **to do**

## Use generative AI to learn more about your customers than you ever thought possible.

To conquer high risks and capture high rewards in customer service, this tech deployment should be about listening, testing, and then capitalizing.

- **Invest in direct engagement between customers and generative AI**, but don't do it blindly. Start by determining which challenges are most likely to pose the most risk for your organization and which generative AI use cases can be designed to mitigate those pitfalls.
- **Use generative AI as a research tool to collect and analyze sentiment-based metrics** for each customer service interaction. Start with low-risk, low-effort use cases that address key customer concerns. Stay mindful of what differentiates your brand today and how AI can enhance what makes your organization unique.
- **Use generative AI not just for interactions and engagement, but for driving innovation.** Use it to mine new opportunities with customers and track customer service success to see how automated applications influence sales and loyalty across the customer lifecycle. Refocus efforts around data governance.

What you need **to know**

### Piloting generative AI in customer service can speed a successful enterprise-wide rollout.

The call center continues to be ripe for transformation. During pandemic lockdowns, it became clear how much customer service could be automated—but we also suffered for the lack of human contact.

With generative AI, organizations get the best of both worlds. By pairing automation with humanity, customer service becomes a proof of concept, demonstrating to the rest of the enterprise how new tech tools can improve employee satisfaction, impact customer engagement, and drive returns.

Using generative AI to make automated responses better and more conversational can quickly demonstrate how AI's impact can be used to upgrade service elsewhere in the organization. And for most organizations, the need and opportunity are wide open. For example, most businesses report their ability to review and retrain customer service bots is insufficient, and just half can proactively alert customers as soon as issues arise.<sup>17</sup>

What you need **to do**

### Exploit successes and learnings in customer service.

Because generative AI is as much about your people as it is about technology, the very visible realm of customer service will serve to motivate change across the enterprise.

- **Reorient customer service from problem resolver to innovation hub.** Foster outcomes-based generative AI experimentation that can be measured, optimized, and scaled. And package specific learnings that might be readily applied across other areas.
- **Shout out generative AI successes** and share exemplary outcomes at individual and functional levels. Demonstrate to employees in other areas how they can benefit from generative AI by highlighting the ways in which new AI capabilities improve not just customers' experiences but employees' circumstances.
- **Challenge and motivate your workforce** to explore how generative AI can help in their day-to-day work—beyond the initial use cases. Create gamified opportunities for individual contributors to pitch use cases that can spark new ideas and applications.



“Customer sentiment and how we handle *customer interactions* are really, really important to us. And so, we’ve used generative AI to read the collected transcripts of those calls and help *more quickly identify* the problematic ones where we need a leader to come in and coach the person to a better result.”

**Judy McReynolds**

CEO of ArcBest

# Value increases when technology meets design. Value explodes when generative AI meets experience.

Today, every product is a digital product—and every company is selling a digital experience. Regardless of industry, all businesses are now competing with the digital experiences that have redefined consumer expectations. And the competition is steep.

Hyper-personalization is now the high bar, as customers demand targeted offers, relevant recommendations, and seamless customer service. But bespoke interactions aren't enough.

Experiences must also be intuitive, serving up what users want before they've even asked for it.

Generative AI promises to elevate these expectations—and give companies the tools to meet them. In fact, global executives say that generative AI is the top trend they expect to disrupt the way their organizations design experiences going forward.<sup>18</sup>

For example, an online retailer could use generative AI to streamline its search function. Rather than using categories and filters, customers could ask for what they want in natural language—typed or spoken—specifying key details, such as color, size, or material. They could even include their budget and target delivery date to refine search results. In this instance, not only do customers get what they need easily, they provide valuable data the retailer can use to inform future business decisions.

In this environment, every experience should incorporate AI and every application of AI should be an experience—the two are inextricably linked.

Chapter 3

**Customer and employee experience + generative AI**

Experience  
is everything

**“We firmly believe that developing a superior customer experience is what truly sets us apart. To achieve this, we are integrating AI technologies, including generative AI, to optimize and elevate how our sales force provides information and knowledge to our customers.”**

**Fernando González**  
CEO of Cemex

# Customer and employee experience

We've identified **three things** CEOs need to know and do right now.

## 1. Strategy

What to know

Generative AI is a seismic shock to experience.



What to do

Find the friction and obliterate it.

## 2. Customers

What to know

Customer trust is the new currency.



What to do

Create ethical journeys that build customer confidence.

## 3. Employees

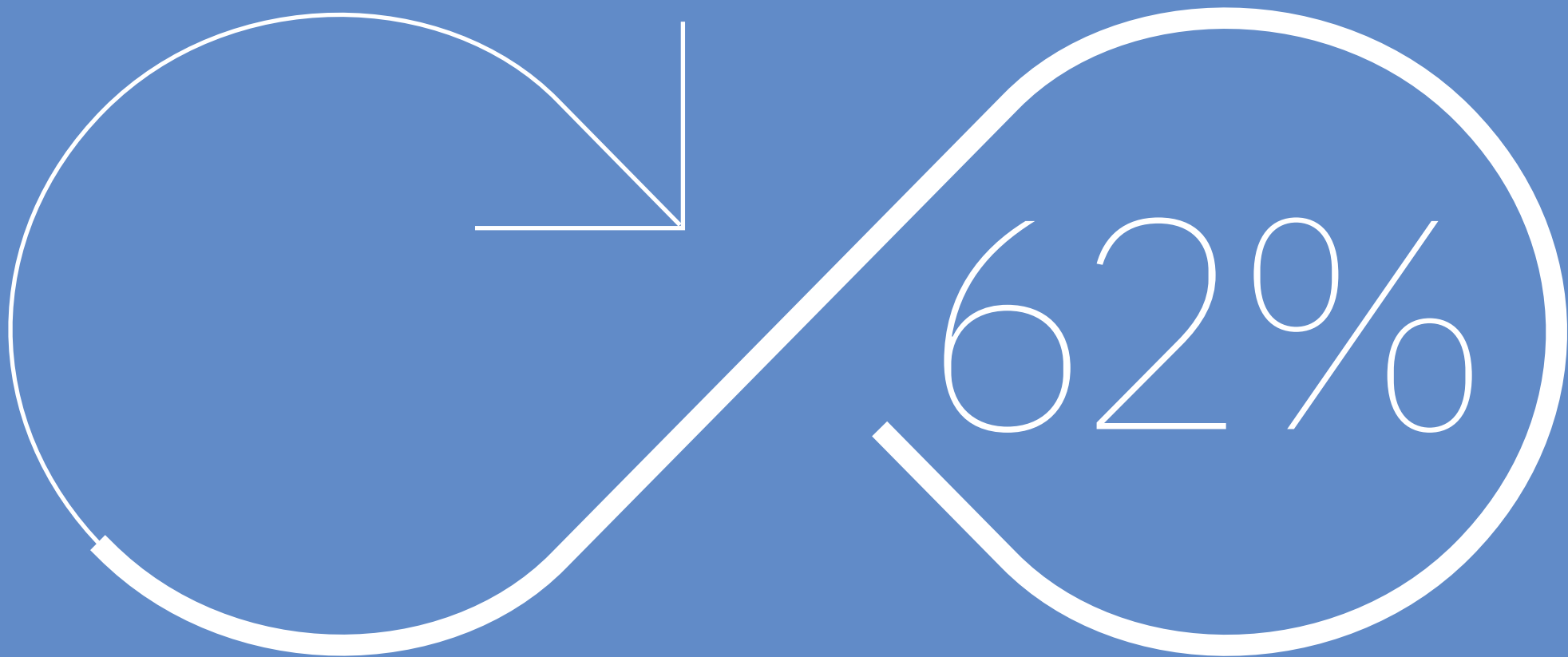
What to know

Generative AI opens the door to reinventing employee experience.



What to do

Give your workers what they want—and more.



62% of executives say generative AI will disrupt how their organization designs experiences.

What you need **to know**

## Generative AI is a seismic shock to experience.

You can't please all of the people all of the time. Or at least you couldn't before generative AI.

The hyper-personalized journeys created by generative AI promise to revolutionize how companies connect with customers and employees. Using true 360-degree customer data from across sales, marketing, and service functions, it can tailor experiences and determine the “next-best action” that will help a company engage a specific customer.

For example, a financial services company could use generative AI to rapidly analyze their own customer data—as well as data from social sources and partner organizations—to determine which customers are most likely to take various actions, from opening a new checking account to investing assets to applying for a loan. Generative AI can then help bankers achieve true one-to-one marketing with a personalized strategy and automated, point-in-time customized offers, translated into the customer's preferred language.

Globally, 62% of executives say generative AI will disrupt how their organization designs experiences—and personalization is at the core of this evolution.<sup>19</sup> In fact, the combination of better content quality and personalization is the number-one benefit driving organizations to reinvent their experiences with generative AI.<sup>20</sup>

But how organizations will get there is still a bit hazy. While 78% of executives say their organization has an approach for scaling generative AI into customer and employee experiences, most are still figuring out how to ensure consistent quality.<sup>21</sup> More than half (56%) say they don't have a process in place to review generative AI output and resolve issues.<sup>22</sup>

One way to control quality is to use a proprietary generative AI model that's trained on approved materials, programmed to meet specific performance benchmarks—and accessible only to employees. These models can be integrated seamlessly into an organization's existing infrastructure, which provides a more cohesive user experience.

What you need **to do**

## Find the friction and obliterate it.

While generative AI is accessible to all, how CEOs choose to use this capability can be a differentiator. By analyzing large amounts of user data, generative AI can identify common pain points and design experiences that are intuitive, engaging, and unique. Make this your moonshot to deliver stellar results.

- **Push designers to become content curators.** Augment content creation with generative AI to create adaptive designs that automatically adjust based on how users access and interact with content. Apply the human touch to the details that can make all the difference.
- **Prioritize everything proprietary.** Not all users interact with experiences the same way. Complement open models with deeper investments in proprietary data to help generative AI identify patterns that are unique to your customers and employees. Generative AI can also use proprietary data to personalize, refine, and improve experiences over time.
- **Lead with design thinking.** Use generative AI to make the complex simple, not the other way around. Embed design into everything you do to change how things work—not just how they look.

**“We iterate a lot on the user experience for Slack because we believe our customers—humans—will determine the journey that we take with AI.”**

**Lidiane Jones**

Former CEO of Slack

What you need **to know**

## Customer trust is the new currency.

Generative AI can give customers what they want faster than ever before—but that convenience is only valuable when it's built on a foundation of trust.

When generative AI offers up personalized recommendations, it limits the number of options on the table. This is, of course, by design. But if customers don't think the suggestions they receive are aligned with their interests or values, personalization can harm rather than help customer relationships.

Striking the right balance is crucial, but CEOs also feel pressure to act fast. To keep up with the pace of change, organizations are rapidly rolling out customer-facing generative AI in several areas:

- **Voice:** 27% of organizations are deploying generative AI-powered voice conversations with customers today, and 75% predict they'll be offering this by 2025.
- **Chat:** 42% of organizations are using generative AI text-based chatbots with customers, with 84% expecting to do so by 2025.
- **Outreach:** 33% are using generative AI for customer outreach, and 81% plan to do so by 2025.<sup>23</sup>

But 80% of business leaders see explainability, ethics, bias, or trust as a major concern on the road to generative AI adoption.<sup>24</sup> And half say their organization currently lacks the governance and structures needed to manage generative AI's ethical challenges.<sup>25</sup>

Some organizations may cut corners to move ahead quickly, but most are committed to responsible action. In fact, 72% of executives say they'll step back from generative AI initiatives if they think the benefits could come at an ethical cost. In this case, less is more. These same organizations are 27% more likely to outperform on revenue growth than others.<sup>26</sup>

What's behind this revenue bump? It comes down to maturity. Because the landscape is precarious, those who tread carefully will get farther faster. Avoiding pitfalls and building customer trust should be top priorities for CEOs who want to build generative AI capabilities for the long haul. In uncharted territory, radical transparency is necessary to build inherent trust.

Consider wearable tech. Apps powered by generative AI can capture data about users' exercise habits, sleep patterns, diet, and biometrics, and summarize results, including areas for improvement or concern, which users can query in natural language. But first, users need to opt in to have their data collected and analyzed. Clearly explaining how generative AI will protect and process their data and making it easy to provide feedback can foster customer engagement and loyalty as they get more comfortable with generative AI.







What you need **to do**

## Create ethical journeys that build customer confidence.

Lead with empathy to build trust while you speed toward innovative new experiences. Prioritizing ethics and inviting customer feedback can help organizations engage customers, identify pain points, and pivot as their demands evolve.

- **Empathize with customers to build trust.** Make empathy a guiding design principle for customer experience. Win customer trust by developing your generative AI ethics in accordance with their concerns. Hold ecosystem partners to the same standards.
- **Turn data provenance into data wealth.** Present customers with trustworthy experiences and gain data in return. Iterate to improve and personalize products and services for growth and greater ROI.
- **Hyper-personalize marketing once and for all.** Build generative AI into customers' experiences from their first brand encounters. Earn trust by powering personalized marketing campaigns, targeted advertising, and direct customer outreach with generative AI—and encourage continual customer feedback.

**“There is a real cultural and training journey to get people to understand that the balance of really good data and experience gives us a much better outcome. You can’t have one without the other.”**

**Paul Graham**  
CEO of Australia Post

What you need **to know**

## Generative AI opens the door to reinventing employee experience.

Generative AI promises to transform jobs across sectors, automating tasks that were previously too complicated for a machine to handle. But business leaders don't plan to replace human talent wholesale. On average, 87% of executives expect job roles to be augmented, rather than replaced, by generative AI.<sup>27</sup>

Developing human-machine partnerships that will engage employees—not enrage them—is an organizational change challenge on steroids. And those that get it right have a lot to gain: Organizations that deliver top employee experiences outperform on revenue growth 31% more than others.<sup>28</sup>

A great experience is also the ultimate change management tool, as it inspires employees to adopt new ways of working. When organizations automate tedious tasks, such as translation or device optimization, it can boost employee productivity and satisfaction by letting humans focus on higher-value work. These productivity gains are ultimately what will allow teams to deliver innovations that both differentiate the organization and make jobs more interesting.

However, automating all the easy tasks could leave humans to handle only the hardest, most frustrating work. To strike the right balance between efficiency and engagement, CEOs must carefully consider where to insert AI into the value chain. They need to rethink the operating model with an eye toward embedding generative AI in ways that will do the most to improve employees' lives.

For example, organizations can use generative AI to provide a seamless conversational interface for back-office systems, rooting the employee experience in natural language. Headless experiences, which separate front-end user interfaces from back-end processing and storage, hide the complexity of underlying systems and streamline user interactions.

The end goal is to give employees a one-stop shop for managing their daily tasks. Rather than logging into separate digital platforms, such as time tracking, HR management, recognition, and performance management, headless experiences let them do more within a single tool they're already using, such as Slack. As companies migrate between systems, the employee experience remains unchanged, smoothing the historical disjointedness as processes move between functional silos—which is a revolution in and of itself.

Centering generative AI around improved ways of working can also help organizations realize better returns. For instance, organizations that manage how employees use generative AI more formally say their employee experience investments yield returns that are 46% higher than their peers. Yet only 37% of organizations have a formal approach in place.<sup>29</sup>

For their part, workers are up for the challenge. Although 54% are concerned new technology will make their jobs obsolete, 84% are confident in their ability to keep pace with advances in technology at work.<sup>30</sup> They're also eager to get hands-on. Almost half of employees would be willing to take a pay cut to work for an employer that would give them the opportunity to work with the latest technologies.<sup>31</sup>


Even so, some CEOs are pushing forward without fully considering their employees. While only 28% have assessed the impact of generative AI on their workforce, 43% have already reduced or redeployed workforce due to generative AI and 46% have hired additional talent.<sup>32</sup>

What you need **to do**

## Give your workers what they want—and more.

Use generative AI to put your employees in the operating model of tomorrow. Developing effective human-machine partnerships can create more value than either can alone, as long as employee engagement stays top of mind.

- **Activate the ultimate change management tool.** Make a good impression with generative AI by showing employees how it can boost their efficiency and productivity—and what that could mean for their careers. Give employees a voice to remediate negative experiences.
- **Convert talent challenges into operating model opportunities.** Integrate conversational AI, hybrid cloud platforms, intelligent workflows, and agile ways of working in a way that empowers people to perform at the top of their game.
- **Expand the remit of human workers.** Lean on employees to help design human-centric experiences and determine which tasks are ripe for generative AI. Pair human workers with digital assistants. Start with HR touchpoints and build out.

An abstract background image featuring a textured, painterly style. The dominant color is a vibrant blue, with various shades and brushstrokes. There are also some white and light-colored areas, particularly towards the right side, creating a sense of depth and movement. The overall effect is that of a modern, artistic wall or canvas.

On average, 87% of executives expect job roles to be augmented, rather than replaced, by generative AI.



## Section 2

# AI-powered data and technology

Progress is built on the back of technology. From simple machines to quantum computers, the tools organizations use define how far they can go—and how long it will take to get there.

Generative AI is no different. When business platforms use generative AI to process data at light speed—or design new tech architectures—entirely new business models are made possible.

Of course, this assumes the tech foundation is solid. Data integrity, governance, and responsible AI are fundamental to every generative AI use case. Open standards and interoperability are essential to speed collaboration and innovation, both internally and with partners.

But first CEOs must build the cultural mindset—and governance guardrails—needed for a new human-technology partnership to flourish. In this chapter, we'll explore how CEOs can drive unparalleled growth by focusing on five key areas: platforms, data, and governance; open innovation and ecosystems; application modernization; responsible AI and ethics; and tech spend.

### Chapter 4 Platforms, data, and governance

Be a creator,  
not a consumer

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### Chapter 5 Open innovation and ecosystems

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Ethics can't  
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### Chapter 8 Tech spend

How will you  
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# Generative AI is disrupting the disruptors—and platform-based businesses have the edge.

From Netflix to NVIDIA, today's top-performing companies are built on digital platforms that connect people and players to deliver greater value. Rather than simply selling products, they serve as conduits for the market itself.

The first wave of platform-based businesses took over entire sectors by serving customers faster and more effectively than ever before. And many incumbents have yet to catch up.<sup>33</sup> In fact, a quick search of share prices shows the gap between platform-natives and traditional businesses is only growing.<sup>34</sup>

Generative AI levels the playing field, letting businesses do more with less on every front. But productivity gains are just the beginning. The true reward will come from business model innovation.

To win in the new market landscape, companies must become creators—not just consumers—of business and technology platforms.

While business platforms focus on facilitating interactions across an ecosystem, technology platforms provide the framework for developing and managing the applications businesses use. And, in the business models of the future, these platforms are inextricably linked. A generative AI platform, for instance, provides the technical support needed to operate a platform-based business.

This type of business model innovation is dependent on a modern IT architecture—and the principles of trustworthy AI. Both generative AI and business platforms demand access to vast stores of data that stretch beyond traditional borders. In the platform economy, open ecosystems are no longer optional.

This gives AI and data governance—traditionally an IT concern—firm footing in C-suite conversations. To gain a competitive edge, companies will need to cut through the red tape. At the same time, they must take a strategic approach to AI ethics, ensuring that platforms are transparent, trusted, and fair.

#### Chapter 4

### **Platforms, data, and governance** + generative AI

# Be a creator, not a consumer

**“[We’ve got robots doing] millions of experiments a week. So, we’re training machine learning models, foundation models, to make sense of those data to find connections that no human ever could.”**

**Chris Gibson**  
CEO of Recursion



# Platforms, data, and governance

We've identified **three things** CEOs need to know and do right now.

## 1. Platforms

### What to know

Generative AI offers a second bite at the platform business model apple.



### What to do

Jump at the opportunity for a second chance.

## 2. Data

### What to know

Data dependency is both a challenge and an advantage.



### What to do

Outfit a generative AI data expedition.

## 3. Governance

### What to know

AI and data governance are board-level concerns.



### What to do

Put governance at the heart of the generative AI lifecycle.

What you need **to know**

## Generative AI offers a second bite at the platform business model apple.

Platforms are at the core of the world's most valuable companies. Their success has been hard to replicate, but generative AI makes a new wave of business model innovation possible. In fact, executives anticipate 57% greater returns on platform investments in 2023 relative to 2020.<sup>35</sup> Even more telling, 94% said they planned to participate in platform business models in 2022, up from only 46% in 2018.<sup>36</sup>

Successful platforms unite the right data, model architectures, governance, and computing infrastructure to enable reliable value creation across the ecosystem with “anyone, anywhere.” However, *Harvard Business Review* found that only 17% of platforms have succeeded in the past 20 years.<sup>37</sup>

Generative AI could be the missing ingredient. It instills platform superpowers by transforming functions across the organization. Executives say they expect generative AI to have the most impact in sales (57%), research and innovation (55%), product development (40%), and customer service (37%).<sup>38</sup>

What you need **to do**

## Jump at the opportunity for a second chance.

Collect all the platform puzzle pieces you couldn't gather the last time you thought about becoming a platform business.

- **Act like a start-up.** Avoid incrementalism. Design a generative AI platform business that could be your biggest, highest-growth, most profitable business unit within three years.
- **Design for outcomes, adapt to surprises.** Structure the platform around real value-adds to platform participants at every touchpoint. Establish a mechanism to constantly assess and iterate the model based on increasing data volumes.
- **Test before you invest.** Test the new generative AI capabilities your platform depends on before pulling the trigger on major investments. Learn lessons from how your customer-facing AI initiatives are faring.

“We do something  
in a small way,  
*experiment,*  
*understand it,*  
*set the boundaries,*  
and then determine  
if it’s scalable or not.”

**Joe Brannan**

CEO of North Carolina Electric Membership Corporation

What you need **to know**

## Data dependency is both a challenge and an advantage.

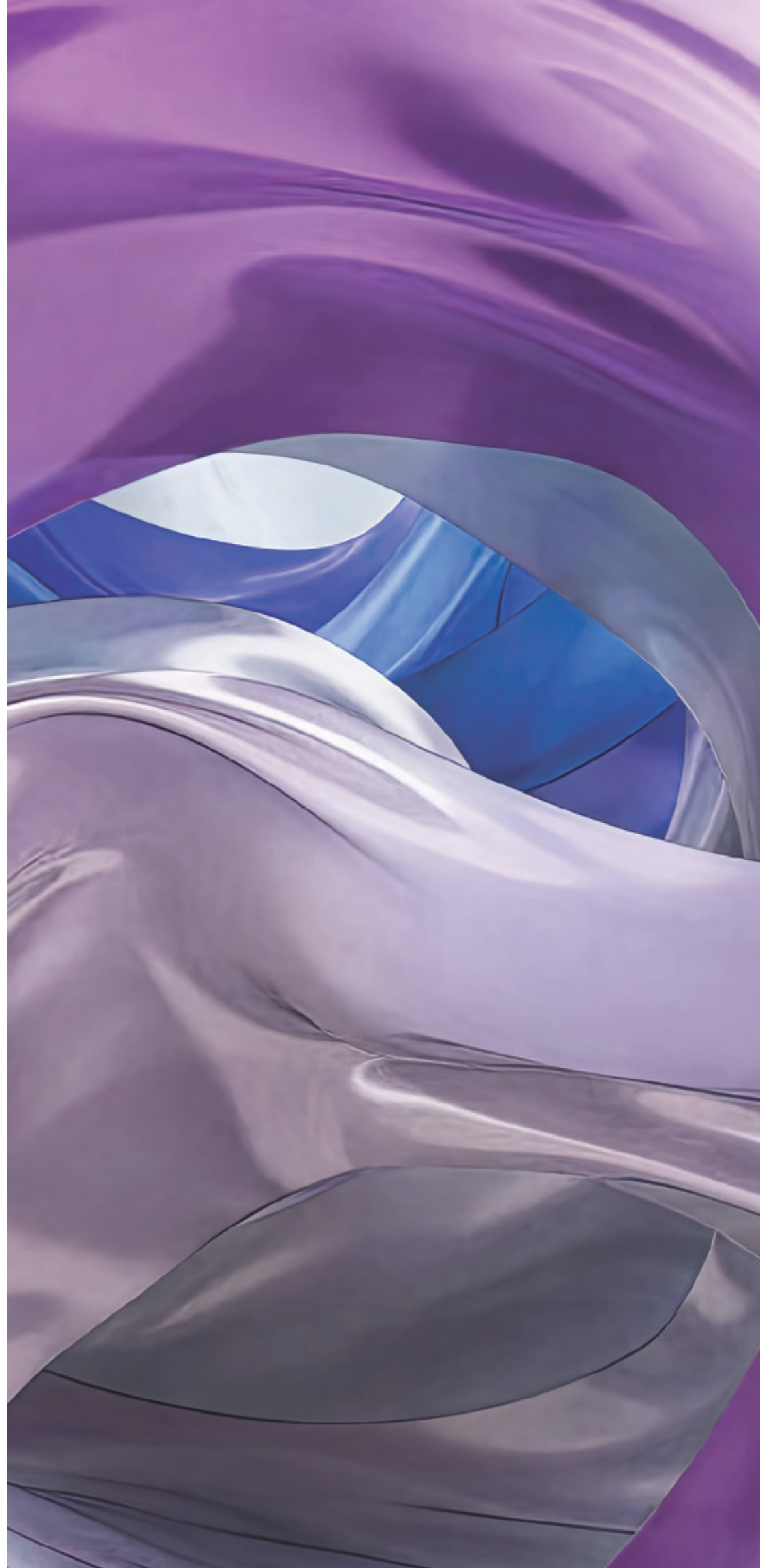
Data is the new oil—expansive, expensive, and difficult to extract. If it's dirty, it can pollute an entire ecosystem. But when tapped responsibly, it could be a gold mine.


Generative AI has made data even more valuable, as companies race to tap its potential faster than the competition. And companies with high data wealth are gaining an edge. Enterprises that have large stores of high-quality data, monetize data effectively, and say their data is trusted by internal and external stakeholders realize almost double the ROI from their AI capabilities (9% versus 4.8% for all others).<sup>39</sup>

But data wealth is often out of reach for companies that try to go it alone. In fact, 53% of CEOs say that a lack of proprietary data will be a barrier to successful generative AI initiatives.<sup>40</sup> Platform business models can help companies overcome this hurdle by sourcing proprietary data from all ecosystem participants, as well as customers.

A generative AI platform can, in turn, fuel business model innovation by integrating cycles of data preparation, model training and tuning, and application development and deployment. This approach delivers flywheel effects: the more data on the platform, the more value to customers; the more customers, the more data, and the better the generative AI model can be trained. It also makes partnerships more valuable overall. Executives cite expanded ecosystem collaboration as the most-expected benefit of adopting generative AI for innovation.<sup>41</sup>

However, the basic plumbing must be in place for value to flow across the ecosystem. Integrating data stores, digital products, and automated workflows will be essential, as openness demands interoperability. The IBM IBV 2023 *Chief Data Officer (CDO) Study* shows that the highest-performing, most interoperable data operations employ silo-busting practices and technologies, such as hybrid cloud (78%), process and task mining (70%), and data fabric architecture (68%).<sup>42</sup>





53% of CEOs say that a lack of proprietary data will be a barrier to successful generative AI initiatives.

What you need **to do**

### Outfit a generative AI data expedition.

Find the data your platform needs in data lakes, data mines, data warehouses, content management systems—even laptop hard drives.

- **Define requisite data sets.** Work backward from the customer experience: what will a generative AI platform need to offer to attract customers and ecosystem participants? What data will those generative AI value propositions depend on?
- **Explore all data sources.** Ruthlessly mine the unstructured data that you need. Develop this data mining capability as a lever of competitive advantage that can differentiate your platform value proposition from the competition.
- **Ask the ecosystem for help.** Expand your data expedition to include your customers, potential ecosystem participants, and their customers. Amplify the platform’s network effects by tapping into their data streams.

What you need **to know**

## AI and data governance are board-level concerns.

Can generative AI be trusted? This question is at the core of the debate around how and where companies should tap this powerful innovation. In today's world, with massive amounts of data from multiple sources being used to train generative AI models, understanding data and its governance is more important than ever.

CEOs get that. Most say concerns about data lineage and provenance (61%) and data security (57%) will be a barrier to adopting generative AI. 45% of CEOs say data privacy is a barrier.<sup>43</sup>

In this environment, AI and data governance aren't just IT issues—they're strategies for value creation. What a company can do with AI is defined, in large part, by how it selects, governs, analyzes, and applies data across the enterprise. And trust is built by communicating that process transparently.

Best-in-class companies, with more than double the average AI ROI (13% versus 6%), assess infrastructure and processes to balance AI experimentation with industrial-strength scaling.<sup>44</sup> Data teams review governance, management, ethics, literacy, and other frameworks needed for people to access, understand, and have faith in enterprise and ecosystem data.

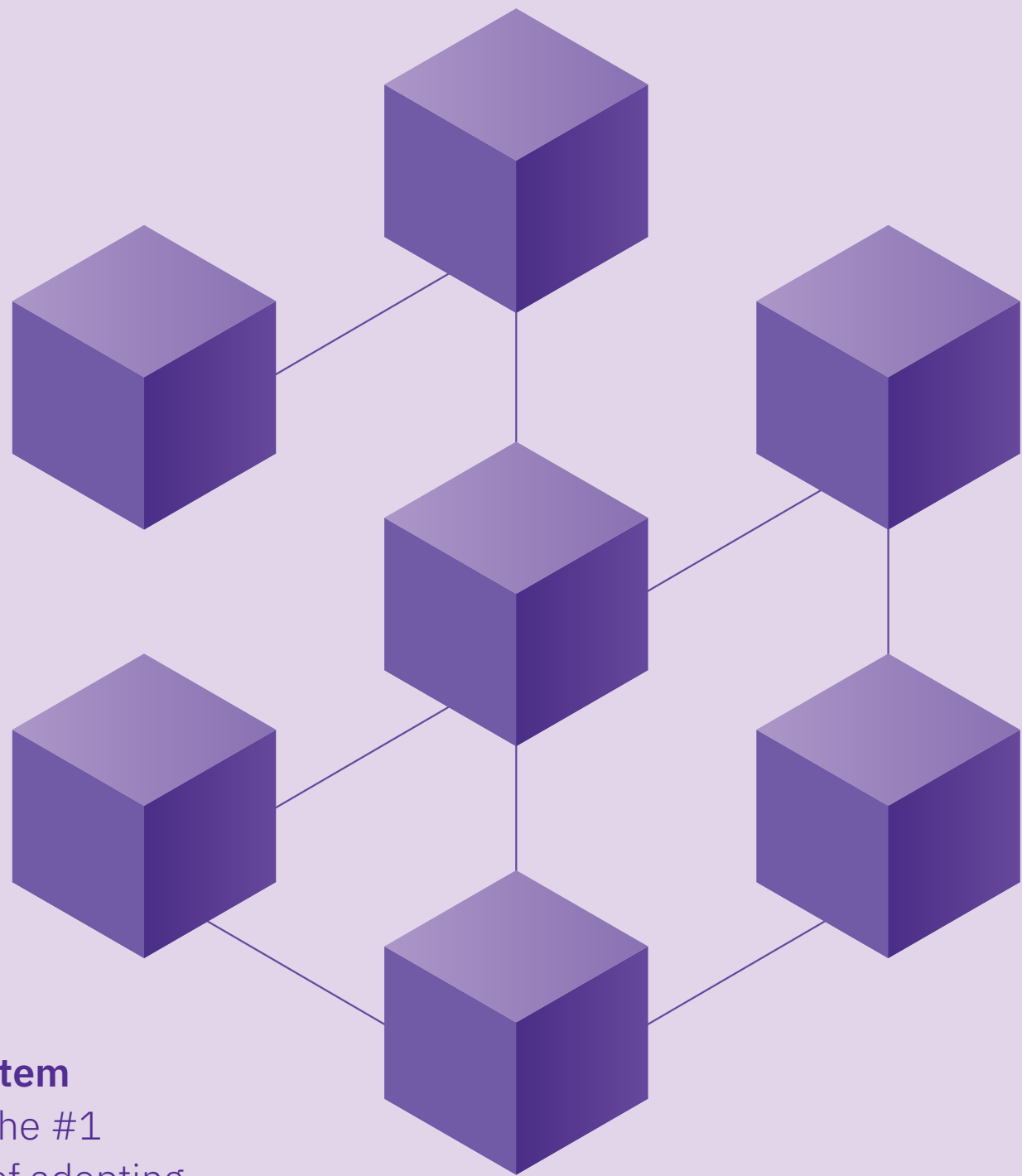
Companies that elevate the AI and data governance conversation to the C-suite have the potential to overcome the obstacles hindering their platform ambitions—and earn the trust of employees, ecosystem partners, and customers.

What you need **to do**

## Put governance at the heart of the generative AI lifecycle.

Make governance a fixture on the executive leadership team's agenda. Balance the power of generative AI with the guardrails required for trustworthy execution.

- **Build a governance-savvy executive team.** Educate your team and the board. Then make AI and data governance recurring agenda items at board meetings, ensuring they get the attention they warrant. Don't just delegate and forget; active leadership is essential.
- **Govern the whole system, not bits and pieces.** Build governance into each stage of the AI lifecycle. Break the design and execution of AI and data governance out of organizational silos. You need an end-to-end system.
- **Put someone in charge.** Appoint and empower a senior executive to lead AI and data governance across the enterprise. Actively mitigate the risks of failure due to fragmented ownership and accountability.



Executives cite **expanded ecosystem collaboration** as the #1 expected benefit of adopting generative AI for innovation.

# Innovation doesn't happen in a vacuum.

It's a team sport—and no organization can change the game on its own. Ecosystem partnerships, where solution and service providers combine their skills and capabilities to deliver strategic outcomes, are essential to create innovations that are truly transformative. Past IBM IBV research found that organizations investing in ecosystems gain a revenue growth premium of 40%.<sup>45</sup> And these investments could become even more lucrative in the age of generative AI.

Generative AI can ignite ecosystem innovation by tapping into the collective brainpower of multiple organizations quickly and easily. By synthesizing their shared expertise, it can brainstorm potential solutions to big problems, predict which products will be the most successful, and optimize project plans to deliver desired outcomes. But this synthesis depends on deep stores of data, massive computing power, and in-demand skills.



That's why gaining a competitive edge with generative AI will require sharing the load with ecosystem partners—and breaking down internal and external barriers. Openness is central to this process, as the data it requires sits in multiple organizations, applications, silos, clouds, and lakes.

Of course, openness must always be accompanied by good governance. To ensure innovations are both ethical and secure, CEOs should ensure that ecosystem partners bring the right talent, technology, and customer relationships to the table, and gauge whether partners share their principles and values. As the next generation of generative AI models quickly comes of age, ecosystem-fueled innovation must be built on a rock-solid foundation of transparency and trust.

Chapter 5

**Open innovation and ecosystems + generative AI**

# Harness the power of ecosystem innovation

**“You’re seeing a lot more openness between large incumbent tech companies [in healthcare] to integrate with each other and have a more open ecosystem. And you’re seeing that because the healthcare system is asking for it.”**

Ashwini Zenoos  
CEO of Commure

# Open innovation and ecosystems

We've identified **three things** CEOs need to know and do right now.

## 1. Innovation

What to know

Generative AI reinvents innovation—and the value of ecosystem contributions.



What to do

Innovate the way you innovate.

## 2. People

What to know

Innovation will become the new ordinary.



What to do

Prepare your organization to do higher-value work with cross-ecosystem skills.

## 3. Ecosystem

What to know

Partnerships that worked in the past might not be right for the future.



What to do

Reevaluate your relationship status.

**1. Innovation**

2. People

3. Ecosystem

What you need **to know**

## Generative AI reinvents innovation—and the value of ecosystem contributions.

Generative AI isn't just another tool in the innovation toolbox. It's the entire workshop.

Every day, people are discovering new ways to use generative AI to automate tasks, make business decisions, and plan for future disruption. And no leader wants to be left behind.

Roughly half of CEOs feel pressure from business partners to accelerate adoption of generative AI—and two-thirds of executives say their organization needs to quickly adopt generative AI for innovation.<sup>46</sup> However, only 39% of organizations are currently implementing or operating generative AI for innovation and research.<sup>47</sup>

The organizations blazing the trail could see big dividends. Innovation outperformers see annual revenue growth that is 74% higher than their peers.<sup>48</sup> Generative AI promises to upgrade ecosystem innovation by transforming the entire workflow. A large majority of executives say generative AI will greatly improve ideation (80%), discovery (82%), collaboration with partners for innovation (77%), and innovation execution (74%).<sup>49</sup>

To make the most of this opportunity, CEOs may need to rethink how the entire business operates. By taking a high-level view of strategy—and being willing to go back to the drawing board—leaders can find new ways to deliver and capture value within ecosystem partnerships.

What you need **to do**

## Innovate the way you innovate.

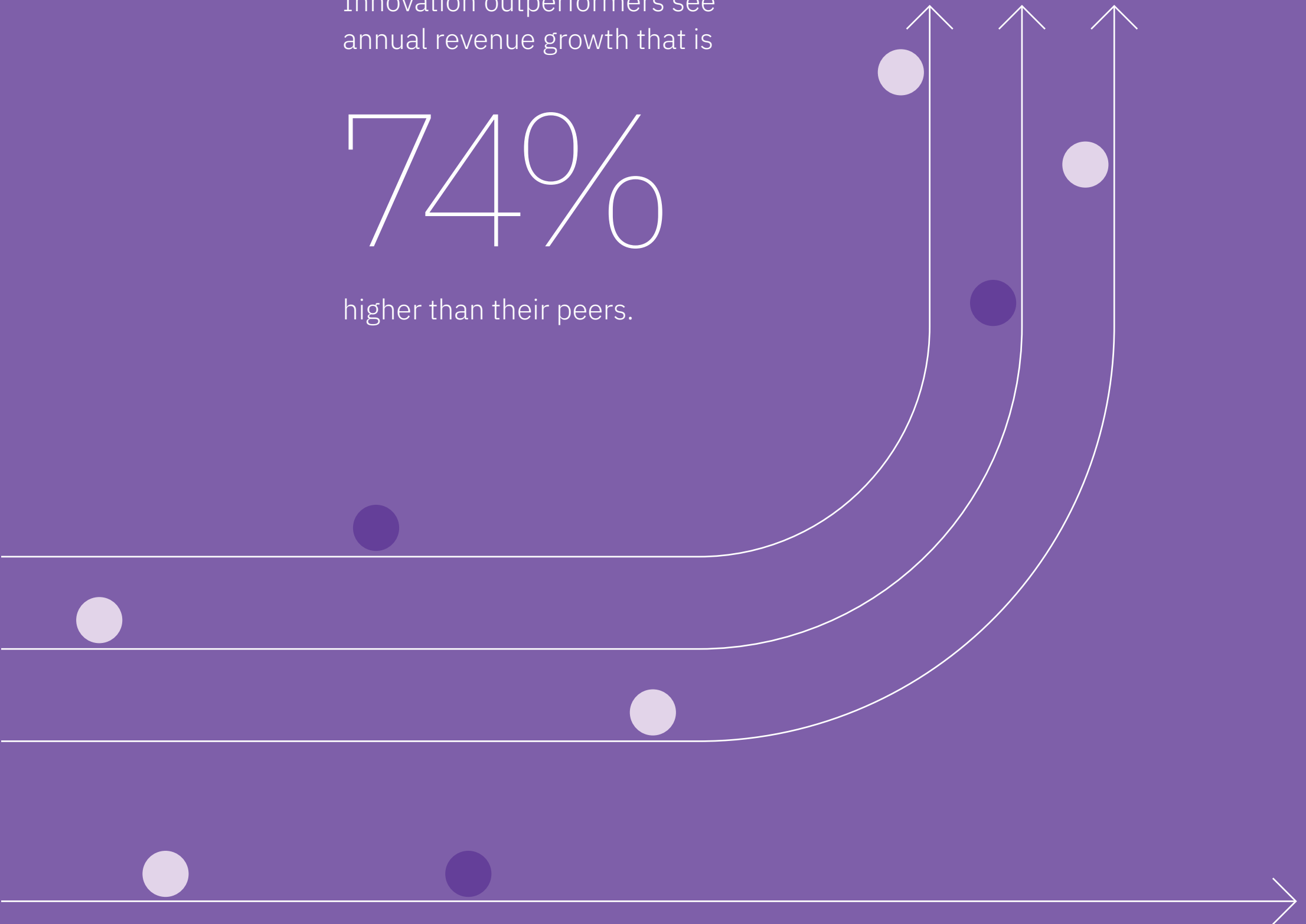
Use generative AI to spark creativity and enhance collaboration throughout the innovation cycle. Synthesize expertise across the ecosystem to solve complex problems, develop competitive products, and disrupt traditional business models.

- **Turn generative AI into an innovation game-changer.** Unlocking the value of generative AI for innovation will require changes across the innovation operating model. Pursue it as a transformative opportunity for greater innovation efficiency and effectiveness.
- **Augment and automate to enhance innovation.** Adopt generative AI across the innovation workflow for greater speed, scale, and impact. Use automation to free up talent to take greater ownership of innovation workflows across the enterprise.
- **Introduce experimentation at scale.** Hypothesize, trial, and adjust how generative AI is applied to innovation in a controlled manner. Measure generative AI innovation outcomes against “manual” outcomes to prove value.

Innovation outperformers see annual revenue growth that is

74%

higher than their peers.





What you need **to know**

## Innovation will become the new ordinary.

Generative AI frees employees from the mundane and helps them realize their untapped potential. However, capability constraints often block AI-powered innovation, both within the organization and across the ecosystem.

More than two-thirds (69%) of organizations expect to use generative AI for open innovation by 2025—up from 29% in 2022. But only 38% of executives say their organization has the in-house expertise to adopt generative AI for innovation.<sup>50</sup> Fewer than half of executives say their organization has identified specific innovation use cases for generative AI (45%) and is ready to adopt generative AI for innovation responsibly (48%).<sup>51</sup>

To work more effectively with external partners, CEOs must first remove roadblocks. While adopting generative AI for open innovation requires access to cutting-edge tools, executives say their top barriers relate to data and people, not technology. Concerns about data privacy, confidentiality, and security top the list, followed by inadequate generative AI skills and expertise.<sup>52</sup>

Yet, executives are hopeful that generative AI will help strengthen their teams' innovation chops. A full 92% of executives looking to apply generative AI to innovation say they plan to augment employees with generative AI rather than replace them.<sup>53</sup>

**“There’s no safe space in the corporate world where you can just hang out and enjoy your winnings from the past. You’ve got to always be driving forward to the next horizon.”**

**Bill Anderson**  
CEO of Bayer AG

What you need **to do**

## Prepare your organization to do higher-value work with cross-ecosystem skills.

Unleash the potential of generative AI-powered ecosystem innovation by addressing internal roadblocks. Build and develop data, skills, and culture as critical ingredients to drive long-term ecosystem success.

- **Fuel innovation with premium data from inside and outside the enterprise.** Develop clear data governance mechanisms to ensure transparency and trust. Create an enterprise data fabric that makes data available where it’s needed across the enterprise. Break down data silos to make it easier to share data with partners.
- **Tap into employees’ inner innovators and extend capabilities outward.** Define, build, and manage organizational capabilities and skills for innovation and generative AI. Make change management an integral part of your innovation and generative AI journey. Work with ecosystem partners to enhance capabilities.
- **Let culture eat tech for breakfast.** Adapt incentive mechanisms and KPIs to encourage collaboration and innovation with generative AI. Allocate decision rights to drive innovation across the enterprise.

1. Innovation
2. People
3. Ecosystem

What you need **to know**

## Partnerships that worked in the past might not be right for the future.

Generative AI has put everything on the negotiating table—and opened the door to unprecedented business propositions.

In this environment, executives are looking for partners in new places, and they're hoping generative AI can help. In fact, executives expect expanding the innovation ecosystem to be the top benefit that comes from using generative AI for innovation.<sup>54</sup>

But successful ecosystem partnerships are about quality—not just quantity. As CEOs apply generative AI to ecosystem innovation, they need to be selective about who they bring to the table. By first assessing their own strengths—and identifying critical gaps—leaders can determine where the organization needs the most support, whether that translates to complementary expertise, specialized data capabilities, or better market access.

Leaders should use the generative AI moment as an opportunity to reassess their existing partnerships and align their ecosystem around common standards and shared values. Understanding the strategic value of the organization's proprietary data, as well as where it resides—in which applications, with known ownership—should be part of this process. Defining the competitive advantage it can deliver—and how it will capture value from the partnership in question—will help leaders decide when and where to share intel with ecosystem partners to fuel innovation.

What you need **to do**

## Reevaluate your relationship status.

It's time to tap your ecosystem's collective intelligence.

Assess whether you have the right partners to spur your innovation forward—and be prepared to swipe left.

- **Refresh innovation strategy through new ecosystem partnerships.** Engage partners for more data, more insights, more discoveries, and better outcomes. Focus on partnerships that provide more pathways for rapid adaptation and access to a broader range of capabilities and technologies. Be clear about what is unique to your organization, what needs to be proprietary, and how your partners will complement what you already have.
- **Build a new relationship checklist.** Assess partners for a common understanding of necessary AI guardrails and principles. Establish clear governance and standards to foster trusted and secure collaboration and innovation. Be clear on deal-breakers.
- **Expand your ecosystem EQ.** Collaborate and co-create using hybrid cloud and open AI platforms for shared data. Embrace open standards and ensure complementarity and compatibility.



“I don’t think it’s overhyped. But I don’t think [generative AI] has been figured out yet, either. It’s very, very early. I think it’s going to be a *multi-year transformation*. As we see with a lot of these breakthroughs, there is initial technology discovery and then a massive amount of industry innovation that delivers real value for businesses. And that’s what I’m really excited about.”

**Lidiane Jones**

Former CEO of Slack

With generative AI,  
technology drives  
innovation—and the  
business propels  
the technology.

Generative AI makes high-value modernization feasible in areas that were previously off limits.

Some apps might be in the “don’t fix what’s working” category—but for how long and at what cost? Generative AI is changing that, but it’s not straightforward. 64% of executives say they need to modernize apps to use generative AI.<sup>55</sup> At the same time, generative AI has the power to transform app modernization: two sides of the same coin.

Rapidly evolving generative AI use cases demand a level of speed, flexibility, and connectedness that traditional IT platforms just can’t handle. Yet everyone wants to leverage the promise that generative AI can make modernization faster, easier, and more affordable.

Chapter 6

**Application modernization + generative AI**

A new way  
to run the  
business

**“It’s crucial to prioritize the acceleration of data capture and the establishment of data accessibility. Embrace the necessary updates and adaptations required to thrive in this new era.”**

**Fernando González**  
CEO of Cemex

# Application modernization

We've identified **three things** CEOs need to know and do right now.

## 1. Operations

### What to know

Combined, generative AI and app modernization fuel a virtuous cycle of increased agility and revenue growth.



### What to do

Grab low-hanging fruit by applying generative AI to apps that have already been modernized.

## 2. Strategy

### What to know

Generative AI presents an opportunity for businesses to retire their technical debt once and for all.



### What to do

Go after opportunities that were previously “off limits”—such as applications and processes in core systems.

## 3. Transformation

### What to know

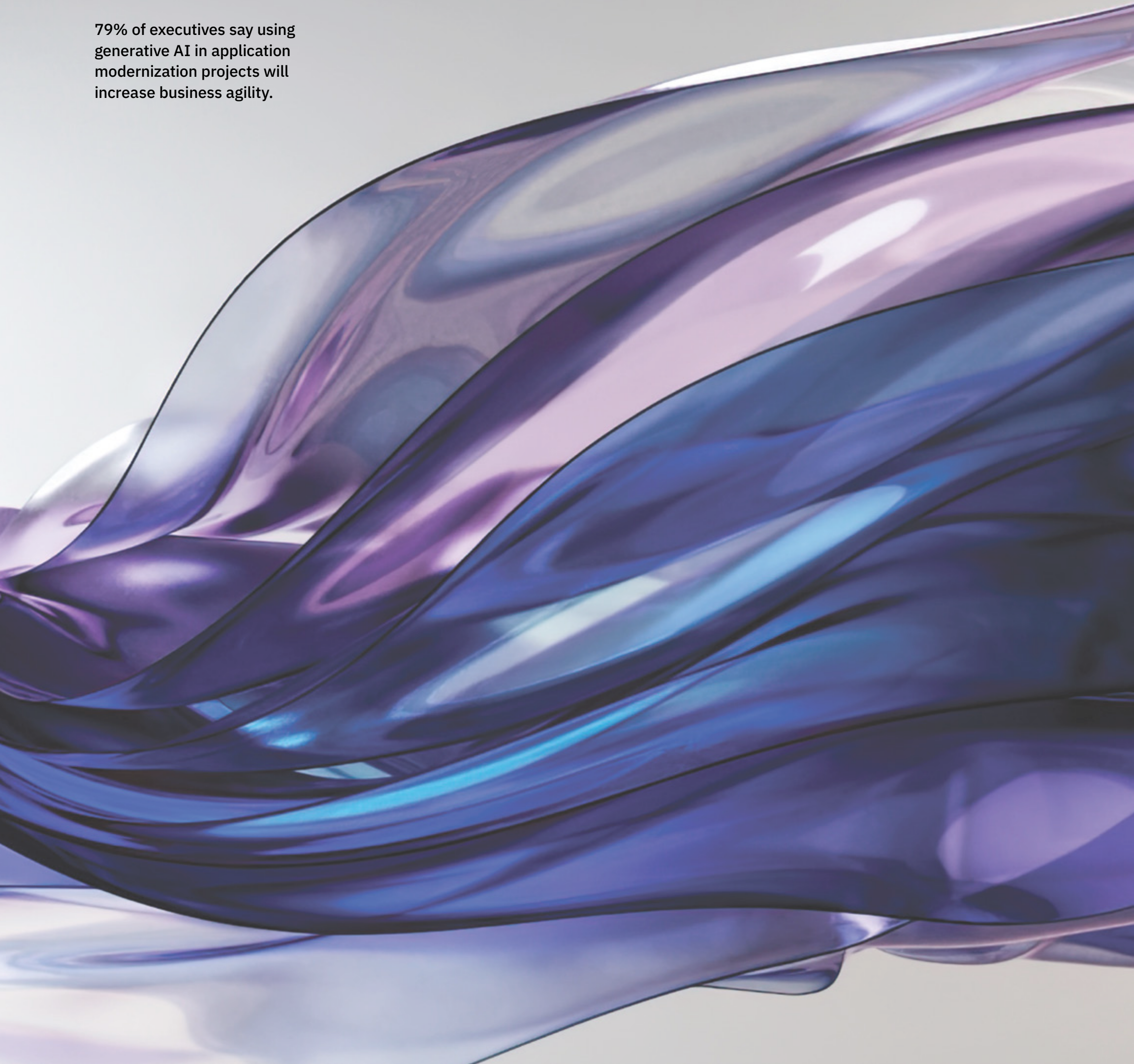
Generative AI is closing the gap between IT and the business—finally.



### What to do

Stop measuring business and IT goals separately—explicitly prioritize IT projects with the strongest links to business value.

79% of executives say using generative AI in application modernization projects will increase business agility.



What you need **to know**

## Combined, generative AI and app modernization fuel a virtuous cycle of increased agility and revenue growth.

Application modernization—the process of updating traditional systems and apps to incorporate modern technologies and architectures—is a precondition for business agility. Rather than bolting modern apps onto legacy systems, making the technical environment ever more complex, businesses can use generative AI to speed app modernization for digital transformation organization-wide.

With generative AI, businesses can use resources more effectively by automating and streamlining parts of the application modernization process. It can generate code snippets and application components and automate testing to make sure apps perform as expected.

CEOs who embrace agile practices are 49% more likely to outperform their peers on revenue growth.<sup>56</sup> And 79% of executives say using generative AI in app modernization projects will increase business agility.<sup>57</sup>

Although generative AI is key to this progress, only 27% of executives say their organization has modernized major workflows. Three in four say their organizations remain unmodernized with disparate systems using fragmented technologies and tools.<sup>58</sup>

What you need **to do**

## Grab low-hanging fruit by applying generative AI to apps that have already been modernized.

Everyone likes a quick win. Apply generative AI to already-modernized applications to showcase its potential—and overcome the inertia that plagues some modernization initiatives.

- **Emphasize low-risk, high-visibility opportunities.** Use generative AI to modernize specific business systems and applications, such as an already-modernized production manufacturing system or service delivery operation.
- **Track and measure the impacts of generative AI on developer productivity.** Use this data to demonstrate the value proposition to other business unit leaders and build buy-in.
- **Seed new teams with experienced talent** to serve as cross-functional guides and advocates. Extend generative AI modernization to opportunities across the enterprise to broadly expand value.

What you need **to know**

## Generative AI presents an opportunity for businesses to retire their technical debt once and for all.

Application modernization is a big phrase for a complex process—one that few executives are excited to sponsor or spearhead. But top business leaders agree it's time to stop passing the buck. Today, 83% of C-suite executives say modernizing apps and data is central to their organization's business strategy.<sup>59</sup> And 89% say using generative AI in app modernization projects will drive growth by improving existing products and services and building new capabilities.<sup>60</sup>

When advanced in tandem, app modernization and generative AI place opportunities that once seemed overly ambitious within reach. How? Some organizations are using generative AI to build or refactor applications, create workflows for migrating legacy ERP systems to SaaS versions, or develop functional requirements for new digital products built to run in the cloud. Addressing these challenges improves productivity and reduces costs associated with code conversion, code generation, transformation planning, and knowledge management.

But companies can't plug sensitive information or private data into a generative AI model in a public cloud environment because that data would become accessible to outside parties. To fine-tune models with proprietary data—and get more targeted recommendations—they need to work in an environment that is both modern and private.

Yet more than half of executives cite financial or technical challenges as hurdles to delivering strategic outcomes with modernization projects.<sup>61</sup> The tide may be turning—many executives now say generative AI offers opportunities to break down those technical (57%) and financial (46%) barriers.<sup>62</sup>

Where to begin? Executives expect generative AI to have the biggest impact on app modernization projects in marketing, customer service, and information security.<sup>63</sup>



What you need **to do**

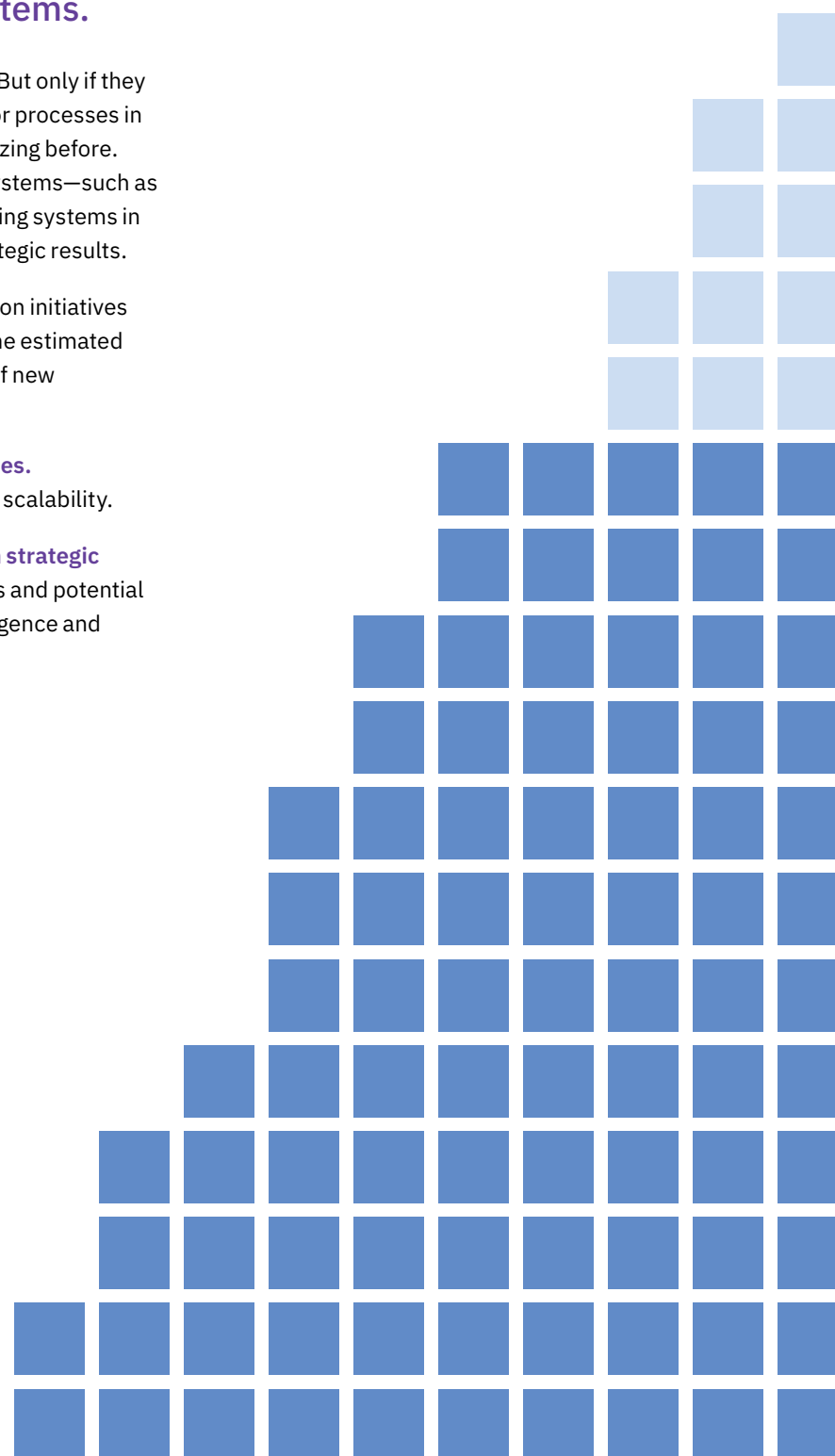
## Go after opportunities that were previously “off limits”—such as applications and processes in core systems.

Generative AI empowers CEOs to run their business in entirely new ways. But only if they reach beyond low-hanging fruit to high-value opportunities: applications or processes in core systems that were either too difficult or too scary to attempt modernizing before. It's time to urgently advance modernization efforts in the core business systems—such as product lifecycle management systems in manufacturing or flight scheduling systems in airlines—where generative AI is expected to deliver the biggest, most strategic results.

- **Find missed opportunities.** Get a list from your CIO/CTO of modernization initiatives that represented the most business value but were abandoned due to the estimated cost or level of difficulty. Tackle those priorities and build a running list of new modernization targets.
- **Update the operating model to align with new generative AI capabilities.** Adopt modern architectural practices, such as composability, to enable scalability.
- **Engage your ecosystem of tech service partners as full participants in strategic generative AI adoption.** Open communication channels with customers and potential partners. Avoid unwelcome surprises by ramping up marketplace intelligence and honestly assessing the competition in the generative AI arena.

89%

of C-suite executives say using generative AI in app modernization projects will drive growth by improving existing products and services and building new capabilities.



“If you’ve got a lot of data, you have an opportunity—if you have the right computational infrastructure—to build foundational models that will give you such *a network effect advantage* that it’s almost silly for anyone to try and come compete with you in the future.”

**Chris Gibson**

CEO of Recursion

What you need **to know**

## Generative AI is closing the gap between IT and the business—finally.

It's no longer IT or the business—IT *is* the business.

With generative AI, technology drives innovation, and the business propels the technology. That means, to get the most value from generative AI, CEOs must break down traditional divisions and integrate functions more holistically.

64% of executives believe that generative AI will bridge the gap between IT and business roles.<sup>64</sup> But what will that look like? It starts with a shared understanding of business goals and enhanced collaboration. This makes it easier for teams to identify opportunities for innovation and improvement and work more effectively toward common objectives.

Tight-knit integration with IT helps leaders ensure that the apps providing the most business value are getting the most support—and that low-performing apps aren't monopolizing IT resources. Generative AI can correlate KPIs to app performance and support requirements, which helps CEOs make faster, smarter decisions about IT spend.

And better decisions lead to greater strategic alignment. Part of it is attitudinal. 60% of leaders who say their generative AI investments are critical have already made significant progress in aligning their enterprise IT architecture with business activities and processes. That's 40% higher than their peers.<sup>65</sup>

Although organizations are split on which roles IT and the business should play in app modernization—half say leadership should be with IT, while the other half say it should be with the business—generative AI can bring them together.<sup>66</sup>

What you need **to do**

## Stop measuring business and IT goals separately—explicitly prioritize IT projects with the strongest links to business value.

Strengthen and lengthen the handshake between IT and the business. Rather than crafting alliances of convenience, form firm and unyielding partnerships. Go beyond establishing innovation squads for generative AI by holding *all* leaders accountable for both technology modernization *and* business performance, irrespective of roles.

- **Make a statement with the people you appoint to lead** your generative AI application modernization initiatives. These individuals should plausibly be two promotions away from a C-suite position.
- **Urgency and speed-to-value should be the mantra you share** with your generative AI teams. Require, reward, and celebrate fast cycles of modernization, where each iteration pushes toward better business outcomes.
- **Shut down any conflicting, competing, or siloed incentives among teams.** Steer recognition and rewards into one consistent program that encompasses all business objectives and applies to every team member.

# Human values are at the heart of responsible AI.

As companies race to discover all the incredible new things generative AI *can* do, CEOs must lead the conversation about what it *should* do.

Each use case comes with its own ethical dilemmas and compliance concerns. How can companies protect sensitive data? How can they use AI in a manner that respects copyrights? Are AI outputs biased, discriminatory—or just plain wrong?

While answering these questions takes the entire team, CEOs must set the organization's moral compass. The course they chart will define how the business will balance cutting-edge innovation with the age-old principles of integrity and trust.

CEOs must implement policies and processes that provide transparency and accountability across the board, offering clarity on how and where technology is being used, as well as the source of the underlying data sets or foundation models. This work will be ongoing, as organizations will need to continuously monitor and evaluate their AI portfolios to ensure they remain in line as policies and processes evolve.

Leaders must foster a culture focused on AI ethics that aims to optimize AI's beneficial impact while reducing risks and adverse outcomes for all stakeholders. Teams should prioritize human agency and well-being, as well as environmental sustainability. This will be a socio-technical challenge that can't be solved with technology alone. Ongoing investments in organizational culture, workflows, and frameworks are necessary to be successful at scale.

The court of public opinion will judge whether companies are behaving ethically—and in line with consumer values. In this way, fairness and appropriateness will be gauged subjectively. But compliance will not.

## Chapter 7

### **Responsible AI and ethics +** generative AI

# Ethics can't be delegated

**“A question can be asked and a response can come back that is just inaccurate. If the person who is receiving it doesn’t really know that it’s made up, inaccurate, or just a weird combination of things, then they might use that information. So, I think we’re just beginning to understand that challenge or that risk.”**

**Judy McReynolds**  
CEO of ArcBest

# Responsible AI and ethics

We've identified **three things** CEOs need to know and do right now.

## 1. Strategy

### What to know

CEOs can't pass the buck on AI ethics.



### What to do

Give ethics teams a seat at the table—not an unfunded mandate.

## 2. Trust

### What to know

Customers are judging every decision you make. Don't jeopardize their trust.



### What to do

Earn trust by aligning with customer expectations.

## 3. Compliance


### What to know

Some companies freeze in the headlights of regulatory ambiguity.



### What to do

Bake in ethics and regulatory preparedness for all AI and data investments.

An aerial photograph of a large crowd of people walking on a floor divided into large, colorful geometric sections. The sections are yellow, orange, red, blue, and green. The people are scattered across the floor, moving in various directions. The text is overlaid on the yellow section.

**80% of executives say business leaders—not technology leaders—should be primarily accountable for AI ethics.**



What you need **to know**

## CEOs can't pass the buck on AI ethics.

Generative AI is like the wild west. The rush to riches has outpaced rules and regulations—and early prospectors have the chance to strike it rich.

But at what cost? Organizations that push forward without considering the intricacies of AI ethics and data integrity risk damaging their reputation for short-term gains.

Executives understand what's at stake: 58% believe that major ethical risks abound with the adoption of generative AI, which would be very difficult to manage without new, or at least more mature, governance structures.<sup>67</sup> Yet many are struggling to turn principles into practice. While 79% of executives say AI ethics is important to their enterprise-wide AI approach, less than 25% have operationalized common principles of AI ethics.<sup>68</sup>

That's why CEOs must take the reins and blaze a trail for others to follow. Roughly three times more executives look directly to CEOs for guidance on AI ethics than the board of directors, general counsel, privacy officers, or risk and compliance officers.<sup>69</sup> And 80% of executives say business leaders—not technology leaders—should be primarily accountable for AI ethics.<sup>70</sup>

That accountability extends beyond decision-making. CEOs must also hold themselves responsible for educating other leaders on emerging ethics issues. By elevating conversations about trustworthy AI to the rest of the C-suite and the board of directors, CEOs can keep key stakeholders from being sidelined. Taking a proactive, inclusive approach helps ensure everyone understands the risks—and the clear action plan for managing them. This lets the organization move faster while keeping leaders in lockstep.

What you need **to do**

## Give ethics teams a seat at the table—not an unfunded mandate.

Roll up your sleeves to close the gap between intentions and actions. Champion ethics teams, policies, and monitoring. Report progress to the board of directors and externally, as appropriate.

- **Take charge, even if it's outside your comfort zone.** Consider appointing a Chief AI Ethics Officer or another leader to run point on enterprise-wide efforts and make accountability clear among current executive roles. Align executives to common AI ethics goals across business units and functions. Make sure the right people come to the table—including your risk and information security execs.
- **Create effective human + technology collaborations.** Set the tone and strike the right balance between automation and augmentation. Recommend that a design guide for AI is created and adopted and that a specific section on algorithmic accountability is incorporated into the company's code of business ethics. Promote the training, AI and data literacy, and change management agenda. Treat impacted employees with dignity and respect.
- **Establish “ethical interoperability.”** Augment your innovation ecosystem by identifying and engaging key AI-focused technology partners, academics, start-ups, and other business partners. Affirm values as part of your corporate identity and culture—and make sure the values of all your partners are aligned.

**“We have to understand the use of the data—and not see generative AI as a black box.”**

Stefano Tomasini

CIO of INAIL

## What you need **to know**

### Customers are judging every decision you make. Don't jeopardize their trust.

It takes decades to build a blue-chip brand—and only days to destroy it. In an era of data breaches and distrust, consumers, employees, and partners are unforgiving of companies that act without integrity.

More than half (57%) of consumers say they are uncomfortable with how companies use their personal or business information and 37% have switched brands to protect their privacy.<sup>71</sup> And consumers rank companies in many traditional industries, including retail, insurance, and utilities, lowest in responsible use of technology.<sup>72</sup>

Partners, investors, and boards of directors are also watching companies closely—but they appear inclined to support responsible AI advancement. CEOs say they feel over six times more pressure from their boards to accelerate generative AI adoption rather than to slow it down.<sup>73</sup>

Employees are eager to work for companies that share their values, as well. 69% of workers say they would be more willing to accept a job offer from an organization they consider to be socially responsible—and 45% say they would be more willing to accept a lower salary to do work at such an organization.<sup>74</sup>

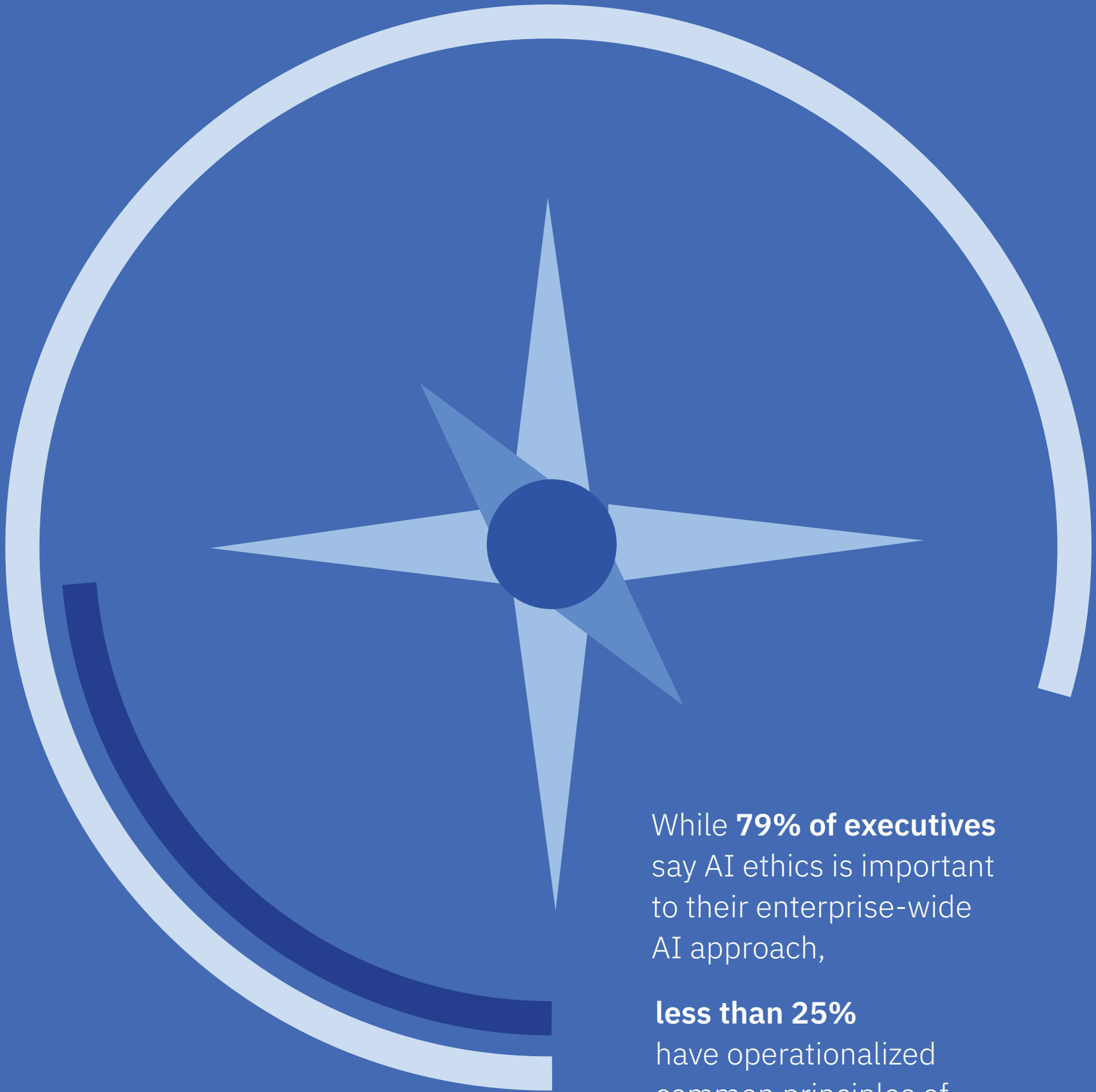
Taken together, these perspectives showcase why companies with stronger data practices create more value. Our *2023 CDO Study* found that roughly eight out of 10 CDOs from these companies say their organization outperforms in data ethics, organizational transparency and accountability, or cybersecurity.<sup>75</sup>

## What you need **to do**

### Earn trust by aligning with customer expectations.

Ensure AI ethics and data integrity are an organization-wide priority from the top down. Achieve greater focus by building a collaborative culture of trust from the bottom up. Make ethics everyone's responsibility—and governance a collective noun.

- **Stay ahead of customers' ethical expectations.** Recognize that your customers experience ethical failures in every part of their lives every day. Build trust by defining your ethical values clearly. Communicate them widely and transparently. Then communicate them again. And again.
- **Put people first.** Re-skill your employee base to understand AI and the proper and improper use of it. Build AI ethics and bias identification training programs for employees and partners to reinforce the importance of trustworthy AI. Clarify when to get help from experts. Empower your teams to be stewards of ethics across and beyond your organization to cultivate customer trust.
- **Hold everyone accountable.** Take personal responsibility, with an expectation that executives and other employees will take personal responsibility, as well. Ask business and AI leaders to sign their names and put their individual reputations on the line—starting with yourself. Prioritize technology ethics as a key part of procurement's ethical sourcing criteria. Make these promises public.



While **79% of executives** say AI ethics is important to their enterprise-wide AI approach,

**less than 25%** have operationalized common principles of AI ethics.

“It used to be that people didn’t ask a lot about what models were you using, what types of AI techniques, what is your data source. *Now executives are asking these questions,* as they should, because these do impact their business.”

**Nicole Eagan**

Chief Strategy and AI Officer of Darktrace

## What you need **to know**

### Some companies freeze in the headlights of regulatory ambiguity.

The EU AI Act is imminent. China is moving ahead with robust regulations and guidelines. And business leaders around the world are feeling pressure to prepare—but they're not exactly sure what they're preparing for.

Globally, fewer than 60% of executives think their organizations are prepared for AI regulation—and 69% expect a regulatory fine due to generative AI adoption.<sup>76</sup> In the face of this uncertainty and risk, CEOs are pumping the brakes. More than half (56%) are delaying major investments until they have clarity on AI standards and regulations.<sup>77</sup> Overall, 72% of executives say their organizations will forgo generative AI benefits due to ethical concerns.<sup>78</sup>

While some remain stuck in this regulatory quagmire, companies that proactively address ethical concerns can press on with confidence. Good data and AI governance is necessary no matter how regulations evolve—and implementing responsible and trustworthy AI from the start will help them achieve compliance when the time comes. Plus, those with strong ethics and governance capabilities have a chance to stand out from the crowd, with three in four executives citing ethics as a source of competitive differentiation.<sup>79</sup>

Prioritizing ethics can help CEOs act decisively in the face of regulatory ambiguity and embrace the early benefits of generative AI without compromising values. This may be why investments in AI ethics are on the rise—tripling from 3% of AI spend in 2018 to nearly 9% in 2025.<sup>80</sup>

## What you need **to do**

### Bake in ethics and regulatory preparedness for all AI and data investments.

The broad strokes of emerging regulations are clear enough to guide CEOs' hands. You can course-correct and recalibrate once the details are finalized. Regardless of how it plays out, stay focused on trustworthy AI. Good governance is essential.

- **Communicate, communicate, communicate.** Advocate for regulation that makes sense. Make sure use cases are easily explainable, that AI-generated artifacts are clearly identified, and that AI training is transparent and open to continual critique.
- **Document everything—and then some.** To help manage risk, create a culture of documentation of AI use in the organization, as well as the current governance around it. Ensure AI-generated assets can be traced back to the foundation model, data set, prompt, or other inputs by creating an inventory of every instance where AI is being used. Seed this source information into digital asset management and other systems.
- **Steer the ship while it's moving.** Be prepared to make adjustments as the regulatory winds shift—or new ones blow.

# Don't spread generative AI spend like peanut butter evenly across the IT portfolio.

There's no "one-and-done" generative AI investment. This revolutionary technology promises to impact every business function—and the entire IT estate. Executives must open the aperture to see the full picture of IT spend.

As CEOs rethink business models, job roles, and workflows to capitalize on the full potential of generative AI, they must also carefully consider the broader IT cost implications. And not all of them are obvious.

Leaders need greater visibility into IT spend to better understand and orchestrate the flow of funds across the enterprise. Taking a wide-angle view of data can help them reevaluate workflows, processes, protocols—and potentially the system architecture itself.

This may reveal the need for big changes, but will businesses have the IT budget to react? Only if they prioritize projects that will deliver a competitive edge, rather than spreading generative AI spend like peanut butter across the IT portfolio.

Chapter 8

**Tech spend +** generative AI

# How will you pay for it?

**“[With generative AI] there’s a 50% improvement in the forecast accuracy, which is quite large. And so, it indicates that we have a commercial or a management bias in our forecasting, and AI is helping to reduce that. With that, you’re also able to create a justification for investments.”**

**Jeroen Diderich**

SVP and GM of North America, Avery Dennison



# Tech spend

We've identified **three things** CEOs need to know and do right now.

## 1. Spending

### What to know

The rush to generative AI is driving unexpected spending.



### What to do

Don't get sidelined by a ballooning IT budget.

## 2. People

### What to know

People costs could torpedo your AI strategy.



### What to do

Unclog the people cost bottleneck.

## 3. Strategy

### What to know

You can't cut your way to growth.



### What to do

Be intentional and stack your investments.

“If you asked me,  
*‘How much are we  
spending on AI?’*  
I couldn’t even tell you  
right now. Because it’s  
everywhere.”

**Bill Anderson**  
CEO of Bayer AG

What you need **to know**

## The rush to generative AI is driving unexpected spending.

Generative AI is exposing cracks in old-fashioned funding practices. Like any nascent technology, it's dynamic by nature. What it needs—and how it can deliver value—is changing by the day. And that throws a wrench into the traditional budgeting process.

If leaders can't be sure which generative AI projects will be most important in the next quarter, let alone the next fiscal year, they won't be able to allocate funds efficiently. This innovation is poised to disrupt IT budgets—and our data shows the foundation is already shifting.

IT executives now expect 2023 generative AI budgets to be more than three times greater than they anticipated earlier this year.<sup>81</sup> For a \$20-billion organization, this translates to a \$5-million increase in projected spend in just over a quarter. And we expect these projections will continue to rise as generative AI matures and use cases crystallize.

However, only 15% of tech execs expect to fund this uptick with net-new spend. Instead, many plan to plunder other parts of the IT portfolio, with 33% saying the money will come at the expense of non-AI IT spend. A slightly larger portion (37%) expect to pull generative AI spending from the broader AI investment portfolio, which could reflect expected synergies across traditional and generative AI projects, some culling of the AI project portfolio, or both.<sup>82</sup>

This approach to reallocation is reasonable, but is it realistic? As generative AI is rolled out across the business, it will have cost implications across the board. Labor and cloud spending, in particular, will grow in lockstep with the increasing demand for generative AI solutions. Overall, the impact is likely to be far-reaching—and a \$5-million budget increase won't get a leading enterprise very far.

What you need **to do**

## Don't get sidelined by a ballooning IT budget.

CEOs need a clear understanding of how high-impact projects will tap resources—both human and technical—to accurately budget for associated costs.

- **View spending with a wide-angle lens.** Assess the entire web of IT costs required to deliver the impact you expect from generative AI. Analyze spend holistically—across IT, cloud, and people—to deliver enhanced business value from all investments.
- **Extend FinOps capabilities across the enterprise** to gain visibility into costs and spending related to all AI, hybrid cloud, and application modernization investments. Understand what your people are working on and how much they cost, and map that back to specific projects, applications, and initiatives to optimize spend.
- **Keep GPUs on your radar.** Generative AI requires the extreme processing power of graphics processing unit (GPU) chips, which are in very short supply. The market price for GPUs will drive up the cost of building and delivering generative AI services in general and is likely to show up in your enterprise cloud costs.

What you need **to know**

## People costs could torpedo your AI strategy.

While generative AI is already more intuitive than many hype-cycle innovations, companies need internal expertise to gain a competitive advantage. But deep generative AI experience is scarce, which makes talent expensive.

*The Wall Street Journal* reports that senior AI engineers are fetching up to \$900,000 salary offers, with entry-level prompt engineers starting at \$130,000.<sup>83</sup> And they're looking for work that will elevate their résumé—not pull them into the weeds.

If companies want to bulk up their bench, they'll have to be willing to pay—and create positions that offer employees the purpose, autonomy, and opportunities for mastery that they seek. Yet, IT executives are still budgeting for the status quo.

In fact, they're forecasting declining labor costs overall, with new staffing projected to hit 18% of generative AI spending in 2023, but only 16% in 2025.<sup>84</sup> This may be wishful thinking, as 72% of CEOs have yet to assess the impact of generative AI on the workforce.<sup>85</sup>

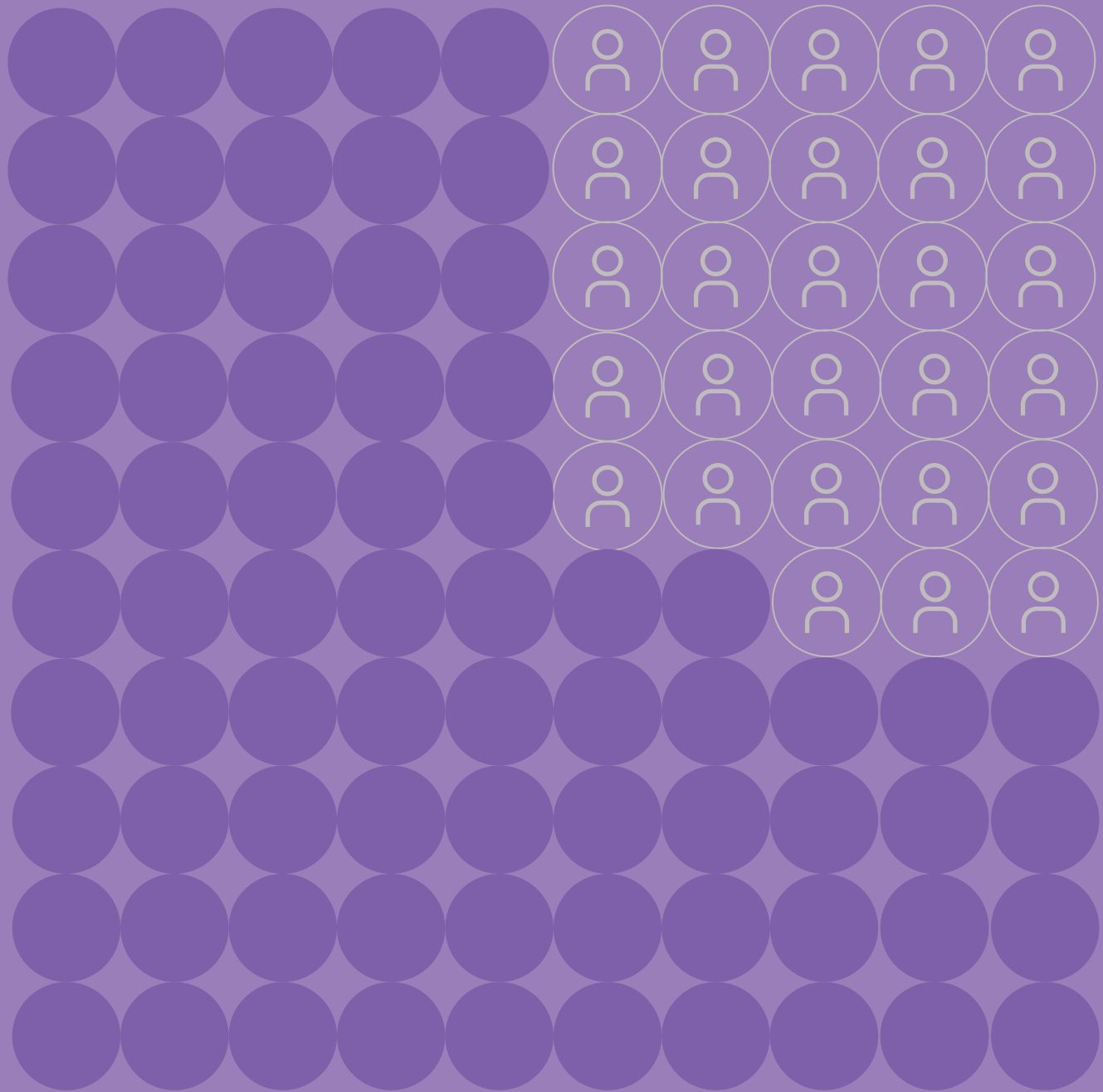
As CEOs prioritize specific use cases, the related labor-spend calculus is prone to shift. Each generative AI model comes with its own set of labor costs, which means net-new costs will vary for each implementation. This puts leaders in a tough position, forcing them to estimate the financial impact of job roles that don't yet exist.

What you need **to do**

## Unclog the people cost bottleneck.

Bolder, high-ROI initiatives can attract top talent and help absorb spiking AI talent costs—if your organization can stomach the higher price tag.

- **Get an unvarnished view of the current market for talent** and the types of talent your organization can compete for successfully. Inner-source to secure skills and flexibility by building a marketplace where those with the right skills (or the interest in learning them) can be matched with opportunities.
- **Build market-based people costs explicitly into all generative AI business cases.** Model the feasibility of business cases based on the attractiveness of the work, not just on the expected talent costs.
- **Engage with strategic partners**, especially technology providers and global systems integrators, to determine which parties can contribute the specific people required to design and execute your generative AI strategy.



72%

of CEOs have yet to assess  
the impact of generative AI  
on the workforce.



What you need **to know**

## You can't cut your way to growth.

Running a tight ship can cut millions of dollars from a bloated IT budget. But streamlining spend can only take a business so far.

To deliver the exponential returns CEOs dream of, leaders must identify which use cases will drive the most transformative growth. For example, only 2% of executives expect to gain an edge by subscribing to public generative AI services that employees can use, such as ChatGPT, while 38% say using a vendor's platform with their own proprietary data will deliver that advantage.<sup>86</sup>

Yet, rather than focusing on income-generating areas of the business, organizations are spreading generative AI funding equally across several cost centers. Almost three-quarters (74%) of generative AI spending will go to HR, finance, customer service, sales and marketing, and IT, where investments are expected to cut costs. Only 26% will go to product-related business functions, where growth-driving innovations incubate.<sup>87</sup>

This makes it difficult to define business cases that break the mold. CEOs need to make data-driven decisions about which generative AI plays do the most to advance strategic objectives—and fund them accordingly. At the same time, don't let the perfect get in the way of the good. Proving one or two quick wins can help build the business case for more grandiose visions.

What you need **to do**

## Be intentional and stack your investments.

Dive into the data to decide where your generative AI program can provide the most bang for your buck. Worry less about financial precision until you've designed initiatives worth doing.

- **Appropriate the private equity playbook.** Apply lessons from the way private equity firms invest in IT. Ruthlessly eliminate initiatives that won't improve the value of the enterprise within three years—and funnel those funds to programs that will.
- **Radically modernize methods and practices for designing strategic IT investments.** Allocate spend based on overall growth potential, not just short-term savings. Stop spreading generative AI funding equally across organizational silos.
- **Think ecosystem always.** Engage your strategic IT service providers and your most valuable customers in discussions about how to maximize the value of generative AI. Make business model innovation a group project.

**“How can we use generative AI?’ is not the right question. It’s, ‘What use cases have we got that we need the most help with and what role could different areas of technology and data analytics play?’”**

**Bernie Hickman**

CEO of Legal & General Retail





## Section 3

# AI-fueled operations

There's no question that generative AI will push companies to evolve in ways that previously seemed impossible. But what exactly will that look like—and how should they get there?

These are the questions CEOs face as they scrutinize and shift their operations to make the most of generative AI. From the back office to customer-facing functions, every aspect of the business must be examined in a new light. Predictability, personalization, and protection have taken on a whole new meaning, and leaders across the organization will need to level up to keep pace with the competition.

As organizations adopt generative AI—piecemeal or at scale—CEOs will need to communicate a clear vision of what they hope to achieve. Rallying the enterprise around shared goals and giving leaders a new way to run the business can put goals that once seemed fantastic finally within reach.

In this chapter, we'll explore how generative AI will impact four key areas that CEOs should prioritize to transform their operations: supply chain, marketing, cybersecurity, and sustainability.

### Chapter 9 Supply chain

Instant insights fuel faster supply chain innovation

93

### Chapter 10 Marketing

This is marketing's sink-or-swim moment

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When it comes to cybersecurity, fight fire with fire

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### Chapter 12 Sustainability

Old school sustainability is obsolete

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# Supply chain automation just got an upgrade.

If you could see the future, would you run your business differently? This is the question CEOs face in the era of generative AI—and supply chain automation has taken it out of the abstract. As real-time data fuels faster simulation and more accurate predictive analysis, it's become easier for businesses to plan for tomorrow.

That's why CEOs are rapidly investing in generative AI to automate and streamline their supply chains. In fact, 89% of executives report that key investments in automation will include generative AI capabilities.<sup>88</sup>

For six out of 10 executives, the business case for investing in automation centers around boosting workforce productivity and agility—and generative AI amplifies these effects for both human employees and AI assistants.<sup>89</sup> Clean and trusted data will be essential to get the intended value from these investments.

Organizations are seizing the generative AI moment to capture opportunities to increase responsiveness, build deeper human-tech partnerships, and innovate at clock speed. Those that don't will be stuck in the control tower wondering why they've fallen behind.

Chapter 9

**Supply chain** + generative AI

# Instant insights fuel faster supply chain innovation

**“If we can reduce our inventory by 10%  
by optimization through digital twins and AI,  
for example, we can easily generate several  
hundreds of millions of dollars more in cash flow.”**

**Okuyama Hiroshi**

Director and Member of the Board,  
Chief Digital Officer of Yanmar Holdings Co., Ltd.

# Supply chain

We've identified **three things** CEOs need to know and do right now.

## 1. Data

What to know

Real-time data is finally for real.



What to do

Stop fighting fires and start rethinking your supply chain.

## 2. Productivity

What to know

Seamless collaboration sparks productivity gains.



What to do

Feed generative AI data that supports supply chain productivity.

## 3. Prediction


What to know

Generative AI is a mirror that lets you see around corners.



What to do

Supercharge supply chain operating models with generative AI platforms.



Nearly two in three executives expect generative AI to accelerate the pace of discovery, leading to new sources of product and service innovation.

What you need **to know**

## Real-time data is finally for real.

As disruption continues to rock the global supply chain, executives are hungry for a single source of truth. In fact, being able to respond to real-time demand volatility is a top operational priority (51%) over the next three years.<sup>90</sup>

With generative AI, they'll finally be able to feast. It can help leaders collect data from across the supply chain in real time and avoid the confusion that comes from competing views. Rather than debating whose numbers are right, teams can look through the same pane of glass to make faster decisions—and elevate their ability to innovate.

Nearly two-thirds (62%) of executives expect generative AI to accelerate the pace of discovery, leading to new sources of product and service innovation.<sup>91</sup> And companies that get it right can gain a crucial advantage: generative AI leaders outperform in innovation 53% more frequently than their peers.<sup>92</sup>

Of course, real-time data won't just appear on the dashboard overnight. To tap into this invaluable asset, CEOs need to address a host of practical and pragmatic data issues, from segmenting and cleaning data to determining how structured and unstructured data should be used across the organization.

What you need **to do**

## Stop fighting fires and start rethinking your supply chain.

Enable innovation with real-time, data-driven insights. Pair these findings with business know-how to deliver differentiated outcomes. Determine which data should be centralized and what should be left at the edge or with third parties to add the most value.

- **Modernize your supply chain with advanced modeling.** Take advantage of generative AI's uniqueness to modernize your supply chain applications and architecture. Engage with quantum computing tools and methods to capitalize on expanded modeling and optimization capabilities.
- **Identify hidden pain points that are candidates for targeted innovation.** Encourage end-to-end experimentation related to demand volatility, sourcing, production, and distribution. Sponsor the integration of supply chain communities that rely on predictive and prospective analysis fueled by generative AI and huge amounts of data.
- **Deploy your AI assistants into your supply chain ecosystem.** Insert your digital technology capabilities into your massive ecosystem of supply chain partners. Bring a new level of synergy and efficiency by exchanging those capabilities with your ecosystem partners. This enables quicker access to data that complies with your standards and accelerators.

What you need **to know**

## Seamless collaboration sparks productivity gains.

Identifying issues that foreshadow future disruption is essential to keep supply chains up and running. But that's only the first step. Acting on that information fast enough to fill the gaps takes coordinated effort on a global scale.

That's where generative AI comes in. It enables faster, more effective collaboration between people, AI assistants, and partners that can proactively identify supply chain anomalies and correct them in real time.

Executives report that generative AI will increase the volume of decision-making by digital assistants by 21% in the next two years.<sup>93</sup> While this does introduce new opportunities for error, 82% of executives agree that the benefits they expect from generative AI exceed the potential risks.<sup>94</sup>

Of course, human workers still have a critical role to play. The creativity, empathy, and critical thinking skills they bring to the table are needed to rethink operations and solve complex problems. How they apply those skills is evolving rapidly, however, with 71% of supply chain executives saying generative AI completely changes how their people do their jobs.<sup>95</sup>

Nine in 10 executives now say their organization's workflows will be digitized with intelligent automation and AI assistants by 2026.<sup>96</sup> This expansive digitization promises to deliver benefits across the supply chain, with 80% of executives expecting generative AI to enable better management by analyzing all relevant supplier performance metrics.<sup>97</sup>

Increased visibility and transparency help leaders respond to risks immediately, rather than waiting for partners to report problems at their own pace. Integrating clean and trusted data from across the supply chain also makes it possible to power a large language model (LLM) that people across the industry can tap for accurate, real-time information.

What you need **to do**

## Feed generative AI data that supports supply chain productivity.

Map the full range of preemptive data initiatives needed to connect people and technology across the supply chain ecosystem. Upskill employees and train tools to speed decisions and actions. Progress an LLM specific to supply chain for your industry.

- **Cultivate human-tech chemistry to uncover real-time insights.** Make this chemistry a commodity that touches every point of the supply chain: planning, sourcing, manufacturing, and distribution and transportation. Increase productivity of both humans and AI assistants with generative AI.
- **Crank up the dial on process improvement.** Look for leaders in each key supply chain function to suggest and execute supply chain process improvements. Augment technology with people and people with technology to deliver superior process outcomes and transform the employee experience. Find ways to free supply chain professionals from transactional work so they can focus on solving real business problems.
- **Replace traditional dashboards with real-time supply chain LLM queries.** Feed comprehensive supply chain metrics and transactional data into generative AI models. Take the latency out of decision-making with LLMs that enable immediate insights. Conceptualize new practices based on gap analysis and points of interrelation. Use the recommendations for predictive and preemptive decisions and actions.



“We’re piloting various AI models to see how we can get to *a better predictability of demand forecasting.*”

Can we improve cycle times, working capital?

Can we predict how demand will evolve, and can we optimize our planning and production process?”

**Jeroen Diderich**

SVP and GM of North America, Avery Dennison



What you need **to know**

## Generative AI is a mirror that lets you see around corners.

Predicting the future isn't just for fortune tellers. Generative AI serves as a counterweight to global complexity, letting leaders detect approaching threats and suggest evasive maneuvers based on more than premonition.

More than four in five (81%) executives agree predictive capabilities with generative AI detect problems earlier, and 77% say generative AI models successfully identify geopolitical and climate risks, enabling proactive mitigation.<sup>98</sup> More tactically, 79% of executives say generative AI will optimize inventory management by predicting future demand patterns.<sup>99</sup>

In response, 80% of executives say generative AI models with visualization and simulation, such as digital twins, will uncover supply chain bottlenecks in real time.<sup>100</sup> But applications will be limited. By 2025, they say only 19% of supply chain use cases will incorporate generative AI, including simulation and modeling of complex systems, transportation optimization, product lifecycle management, and customer service and real-time response.<sup>101</sup>

What you need **to do**

## Supercharge supply chain operating models with generative AI platforms.

Create self-learning simulations that let you identify, visualize, and proactively correct critical operating exceptions. Hyper-automate transactional work to create next-level operational efficiencies.

- **Preempt the next shock. Predict and embrace disruptions.** Deploy analytics, data visualization, and simulation models, along with generative AI capabilities for pattern recognition. Act calmly and resolutely to keep your supply chain afloat while the competition takes on water.
- **Put mission-critical touchpoints front and center.** Align the most crucial and differentiating supply chain workflows with your early predictive generative AI use cases. Involve key partners for improved collaborative foresight. Ensure generative AI-driven artifacts are clearly identifiable and auditable.
- **Measure the positive impact of premodeling.** Regularly assess the performance and ROI of generative AI-driven predictive analysis. Set clear goals to ensure these efforts are delivering the desired results and adjust as needed for continuous improvement.

# Generative AI offers marketing a time to shine.

Companies have long had the data they need to create hyper-personalized experiences. But it's been housed in disparate data sets across multiple departments, and marketing didn't have the power to harness it—until now.

Generative AI fuels both high-octane content creation and real-time data analysis, giving marketing teams the nitro boost needed to deliver bespoke customer communications. This can both supercharge the organization's brand and introduce new risks. In this environment, 76% of CMOs say generative AI will change the way marketing operates—and 76% also say the failure to quickly adopt generative AI will significantly hurt their ability to stay competitive.<sup>102</sup>

While many marketing organizations are already using generative AI based on public large language models (LLMs) for content creation, few have tapped this game-changing capability for extreme customization by feeding the models their own data. But that will soon change, as more than half (51%) of CMOs say they have plans to build foundation models with proprietary data—the intellectual capital about customers that sits in marketing—before the end of 2024.<sup>103</sup>

Generative AI offers a way to create content faster with more personalized messages, and it gives marketing executives more control over analytics, making it far easier to distill insights from customer data with speed and specificity at scale. It highlights patterns that tease out the details of customer preference, letting marketers finally go beyond targeted segmentation to serve up truly individualized offers and interactions.

The real-time insights it enables can also help marketers gauge whether personalized products, services, and experiences are hitting the mark—and shift gears quickly when the answer is no.

Chapter 10

**Marketing +** generative AI

This is marketing's  
sink-or-swim  
moment

**“I just gained back three hours for 10 people.  
That’s 30 hours of productivity. Now what  
are you going to do with those 30?  
That’s the exercise.”**

**Scott O’Neil**

CEO of Merlin Entertainments

# Marketing

We've identified **three things** CEOs need to know and do right now.

## 1. Transformation

### What to know

Marketing is the pacesetter for enterprise-wide generative AI.



### What to do

Position marketing as the model for generative AI-driven workforce transformation.

## 2. Content

### What to know

Content creators are freed from feeding the beast.



### What to do

Prioritize creative ideation and high production value in marketing content.

## 3. Hyper-personalization

### What to know

With generative AI, hyper-personalization is no longer a pipe dream.



### What to do

Build 360-degree customer profiles using integrated data.

What you need **to know**

## Marketing is the pacesetter for enterprise-wide generative AI.

When all the mundane and repetitive tasks are automated, how should humans spend their time? More than one in four (27%) executives expect marketing roles to be automated due to generative AI.<sup>104</sup> While this may sound dire for marketing professionals, there's a huge opportunity yet to be uncovered, according to Mark Read, CEO of WPP, the world's largest advertising organization.

"We know what jobs [generative AI] will disrupt, but we don't know what jobs AI will create. And I'm sure it'll create many, many jobs. If I look at WPP, probably half the jobs inside the company didn't exist 20 years ago. We didn't have social media managers. We didn't have programmatic media managers. We didn't have search engine optimizers. I could go on."<sup>105</sup>

To realize its full value, generative AI models will need to access customer data across the full chain of engagement—from marketing to sales to service. That means marketing teams have an amazing opportunity for growth, but also need to broaden their view of data privacy and governance to manage brand risks—and safeguard customer trust. However, only 26% of CMOs say their marketing function is implementing generative AI in collaboration with both sales and customer service.<sup>106</sup>

Rethinking the marketing operating model to enable more effective human-technology partnerships frees up humans to do higher-value work. Bolstering creativity and innovation, strategic thinking and decision-making, and product positioning and merchandising can help marketing teams upskill and accelerate through the learning curve. And once these teams hit their stride, CEOs can distill learnings into a road map that will help other functions integrate this technology more effectively across the enterprise.

What you need **to do**

## Position marketing as the model for generative AI-driven workforce transformation.

Challenge your CMO to redefine what marketers do. And what they don't. Build lessons learned into transformation of other functions across the enterprise.

- **Make the CMO the champion of the customer.** Position marketing as the owner of the brand's customer experience and lifecycle. Give it the responsibility and authority to influence the customer value chain across the enterprise. Recognize and address brand risks while leveraging new engagement opportunities offered by generative AI.
- **Emphasize higher-value role creation.** Work with the CMO to build marketing teams rooted in the skills needed for the generative AI era. As in customer service, apply lessons learned from marketing's reinvention to other functions.
- **Turn apprehension into excitement.** Encourage your CMO to execute a purpose-driven, targeted, formal change management approach to help marketers understand and lean into new value propositions for their roles. Lead with openness, transparency, and authentic communication from both the top down and the bottom up.

**"If you want to correlate data, a machine is more powerful than a human. If you want to find something in thousands of pages, a machine is powerful. But the human still has to decide."**

Vincenzo De Lisi

CIO of the Ministry of Justice of Italy





“There are many opportunities for job creation, *to not have humans waste their time* on mundane tasks that machines can do in a repeatable fashion.”

**Simon Khalaf**  
CEO of Marqeta

What you need **to know**

## Content creators are freed from feeding the beast.

Content production can be oppressive. As teams rush to meet never-ending deadlines, high-value strategic work is often lost in the shuffle.

Generative AI promises to change all that. It can take on the lion's share of content creation work, helping teams summarize messaging, brainstorm catchy taglines, and optimize assets for different audiences.

By 2025, three in four CMOs say their organization will use generative AI for content creation. And more than half say they will use it for content transcreation (51%), which goes beyond simple translation to ensure the tone and meaning of the original asset is appropriately localized for a specific geography or culture.<sup>107</sup>

As generative AI plays a larger role in content creation, teams will be able to spend more time thinking strategically about how messaging can support both business objectives and customer needs—and experimenting with innovative marketing approaches. They can create dynamic journey maps based on what buyers are doing.

Rather than frantically filling the publishing pipeline, they can thoughtfully consider where high-value content should be created based on data inputs and determine which delivery methods will be most effective for each customer. These directives can also fuel product and merchandizing decisions across the organization.

What you need **to do**

## Prioritize creative ideation and high production value in marketing content.

Raise the bar for marketing materials by tying them to touchpoints and moments of truth along the customer journey. Boost productivity by streamlining content creation and diverting human energy toward higher-value work.

- **Say goodbye to writer's block.** Show teams how generative AI can accelerate the content production process. Tap LLMs customized with your organization's data to help brainstorm topics, headlines, social posts, and variations on messaging that will work for different audiences. Triple check to eliminate bias in any content created by generative AI—or humans.
- **Close the gap between customer needs and marketing content.** Determine where content is needed to prompt desired customer actions and outcomes and use generative AI to produce pieces that will alleviate specific pain points on the customer journey.
- **Identify people doing tomorrow's jobs today.** Discover the new roles that generative AI enables by paying close attention to people on the front lines. Those who embrace generative AI from the start will have insights, leading practices, and lessons learned that will help you define the MarOps model of the future.

What you need **to know**

## With generative AI, hyper-personalization is no longer a pipe dream.

Every customer is unique—but on a traditional marketing dashboard, they get diluted in a sea of aggregated data. The details needed to make personal connections are lost.

More than two in five (42%) CMOs say scaling hyper-personalization is a marketing priority—and 64% expect to use generative AI for content personalization in the next year or two.<sup>108</sup> But organizations need a consolidated, granular view of customer behaviors and preferences to get there. This takes flawless data integration and management, which has long been marketing's Achilles heel.

That's why CMOs crave more authority over data collection and insights. When asked which aspects of marketing they want to control more, analytics topped the list.<sup>109</sup>

Generative AI could synthesize the complexity of customer preferences and behaviors into actionable insights that marketers need. By analyzing customer data faster and more dynamically from a variety of sources, teams can see what works best for specific customers and tailor outreach efforts accordingly. From personalized content and experiences to bespoke chatbot support, generative AI can help teams address customer needs in real time.

The list of potential applications keeps growing, and CMOs are focused on building a strong foundation of analytical capabilities that will help them keep up with the pace of change. For example, 78% of CMOs expect to use generative AI to conduct data analysis and capture insights from digital/social channels by the end of 2024—up from 36% today.<sup>110</sup> And 86% of CMOs say they plan to use generative AI to analyze customer insights by 2025.<sup>111</sup>





What you need **to do**

### **Build 360-degree customer profiles using integrated data.**

Unified data will make all the difference in hyper-personalized marketing. Give CMOs autonomy over the marketing tech stack across all touchpoints, including sales and service.

- **Build multidisciplinary marketing and IT teams.**  
Align CMO and CIO priorities, incentivizing partnership between the two. Stand up the infrastructure, systems, and data integration required for true one-to-one marketing with generative AI.
- **Get the full picture of your customers' needs.**  
Break down functional silos to consolidate data from marketing, sales, and customer service to capture a complete picture of customers' individual journeys with your business.
- **Supercharge open models with customer data.**  
Position your customer data as your best brand differentiator and defense against misinformation. At the same time, leverage the speed and scalability of open and public models to personalize experiences and offerings—while securing sensitive data each step of the way.

Generative AI  
amplifies risk—  
and resilience.

Generative AI has given rise to a new generation of cyberthreats. Hackers have more opportunities to attack vulnerabilities—and more ways to execute their malicious campaigns.

Fortunately, the opposite is also true: generative AI can fortify business defense. In the near term, generative AI will speed up security processes that were once a heavy lift. And by analyzing vast amounts of data and recognizing patterns—and anomalies—generative AI can spot threats as quickly as they materialize.

As bad actors add new tricks to their repertoire, cybersecurity teams will need to move fast to keep pace. In this game of cat-and-mouse, vigilance will be the key to managing vulnerabilities—and staying a step ahead.

Chapter 11

**Cybersecurity +** generative AI

When it comes  
to cybersecurity,  
fight fire with fire

**“How do you have generative AI and LLMs be the cause of risk, but also have AI be the thing that can keep your data safe? So, I think we might ... see more AI against AI trying to keep the ecosystem in balance.”**

**Nicole Eagan**

Chief Strategy and AI Officer of Darktrace



# Cybersecurity

We've identified **three things** CEOs need to know and do right now.

## 1. Cyber risk

### What to know

Generative AI ushers in a world of new risks and threats.



### What to do

Treat generative AI like a burning platform and secure it now.

## 2. Data

### What to know

Trustworthy generative AI isn't possible without secure data.



### What to do

Make trusted data the backbone of your organization.

## 3. Cyber resilience


### What to know

Using generative AI for cybersecurity is a force multiplier.



### What to do

Reorient cybersecurity investments around speed and scale.



Almost all executives (96%)  
say adopting generative AI  
makes a security breach  
likely in their organization  
within the next three years.

What you need **to know**

## Generative AI ushers in a world of new risks and threats.

Generative AI has given cyberattackers a whole new arsenal. Hackers are no longer just spoofing emails—today they can mimic voices, faces, and even personalities to trick victims into falling into their traps. And this is just the beginning.

As generative AI proliferates over the next six to 12 months, experts expect new intrusion attacks to exploit scale, speed, sophistication, and precision, with constant new threats on the horizon. When considering both likelihood and potential impact, autonomous attacks launched in mass volume stand out to executives as the greatest risk. However, they expect hackers faking or impersonating trusted users to have the greatest impact on the business, followed closely by the creation of malicious code.<sup>112</sup>

How organizations implement generative AI could introduce new vulnerabilities, as well. In fact, 47% of executives are concerned that adopting generative AI in operations will lead to new kinds of attacks targeting their own AI models, data, or services.<sup>113</sup> And almost all executives (96%) say adopting generative AI makes a security breach likely in their organization within the next three years.<sup>114</sup>

With the average cost of a data breach reaching \$4.45 million globally—\$9.48 million in the US—companies are investing heavily in managing new cybersecurity risks.<sup>115</sup> Executives say their 2023 AI cybersecurity budgets are 51% greater than they were in 2021. And they expect those budgets to climb an additional 43% by 2025.<sup>116</sup>

What you need **to do**

## Treat generative AI like a burning platform and secure it now.

Pressure cybersecurity leaders to act with urgency, responding to generative AI's risks as immediate—not incremental.

- **Understand your AI exposure.** Convene cybersecurity, technology, data, and operations leaders for a board-level discussion on evolving risks, including how generative AI can be exploited to expose sensitive data and allow unauthorized access to systems. Get everyone up to speed on emerging “adversarial” AI—nearly imperceptible changes introduced to a core data set that cause malicious outcomes.
- **Secure the entire AI pipeline.** Focus on securing and encrypting the data used to train and tune AI models. Continuously scan for vulnerabilities, malware, and corruption during model development. Monitor for AI-specific attacks, such as data poisoning and model theft, after the model has been deployed.
- **Invest in new defenses specifically designed to secure AI.** While existing security controls and expertise can be extended to secure the infrastructure and data that support AI systems, detecting and stopping adversarial attacks on AI models requires new methods.

What you need **to know**

## Trustworthy generative AI isn't possible without secure data.

Data is the lifeblood of generative AI. All models rely on data to answer queries and inform insights—which is why training data has become a target for cyberattacks.

While hackers still want to steal data to sell to the highest bidder, data infiltration offers a new path to ill-gotten gains. If they can change the data driving an organization's generative AI model, they can influence business decisions with targeted manipulation or misinformation. This evolving threat introduces a whole host of new legal, security, and privacy concerns that CEOs will need to manage enterprise-wide.

Executives see the writing on the wall. As they adopt generative AI, they expect a wide variety of risks to materialize, with 84% concerned about widespread or catastrophic cybersecurity attacks that could introduce new vulnerabilities. One in three executives say these risks can't be managed without fundamentally new forms of governance, such as comprehensive regulatory frameworks and independent third-party audits.<sup>117</sup>

Overall, 94% of executives say it is important to secure AI solutions before deployment.<sup>118</sup> Yet only 24% of their generative AI projects will include a cybersecurity component within the next six months—and 69% say innovation takes precedence over cybersecurity for generative AI.<sup>119</sup>

This shows a glaring disconnect between the understanding of generative AI cybersecurity needs and the implementation of cybersecurity measures. To prevent expensive—and unnecessary—consequences, CEOs must address data cybersecurity and data provenance issues head-on by investing in data protection measures, such as encryption and anonymization. Data tracking and provenance systems can better protect the integrity of data used in generative AI models, as well.

What you need **to do**

## Make trusted data the backbone of your organization.

Evolve your cybersecurity practices to consider the requirements of multiple generative AI models and data services.

- **Build trust and security into AI use.** Prioritize data policies and controls centered on security, privacy, governance, and compliance. Communicate how transparency and accountability are critical to prevent bias, hallucinations, and other concerns while managing risk.
- **Protect the data that powers AI.** Task your CISO to discover and classify sensitive data used in training or fine tuning. Implement data loss prevention techniques to prevent data leakage through prompts. Enforce access policies and controls around machine learning data sets. Expand threat modeling to cover generative AI-specific threats, such as data poisoning and outputs containing sensitive data or inappropriate content.
- **Treat cybersecurity like a product. And stakeholders like customers.** Cybersecurity has a critical role to play in securing the AI initiatives that will drive revenue. To secure the AI that you use in products, educate your teams on the cybersecurity threats that come with generative AI. Highlight the value of changing behaviors to improve data and security hygiene. Encourage adoption by aligning cybersecurity outcomes to business outcomes.

“I’m seeing the *increasing importance of security* because many things are starting to connect. ... So we need a strategy to protect all of them with the same philosophy and same AI technology.”

**Okuyama Hiroshi**

Director and Member of the Board,  
Chief Digital Officer of Yanmar Holdings Co., Ltd.



84%

of executives plan to prioritize generative AI cybersecurity solutions over conventional cybersecurity solutions.

What you need **to know**

## Using generative AI for cybersecurity is a force multiplier.

When applied to cybersecurity, generative AI can be a business accelerator. It can automate repetitive and time-consuming tasks, freeing up teams to focus on the more complex and strategic aspects of security. It can also detect and investigate threats and learn from past incidents to adapt the organization's response strategies in real time.

With so much to gain, CEOs are under pressure to introduce generative AI quickly and broadly. But to avoid the collapse of a growth-fueled house of cards, it's imperative that business leaders also use the technology to build resilience. In that way, execs not only avoid the risks of generative AI—they also use it to make their organizations stronger.

More than half of executives (52%) say it will help them better allocate resources, capacity, talent, or skills, and 92% say they are more likely to augment or elevate than replace their cybersecurity workforce as they adopt generative AI.<sup>120</sup>

These new tech tools can help teams reduce complexity and focus on what matters most, which may be why 84% of executives plan to prioritize generative AI cybersecurity solutions over conventional cybersecurity solutions.<sup>121</sup>

Using generative AI in cybersecurity can also extend the multiplier effect across your ecosystem—and 84% of executives say open innovation and ecosystems are important for their future growth strategy.<sup>122</sup> As these leaders look to build relationships that support innovation and growth, most expect generative AI capabilities will influence their selection of ecosystem partners in cloud (59%) and across the business (62%) over the next two years.<sup>123</sup>

What you need **to do**

## Reorient cybersecurity investments around speed and scale.

Make AI an essential tool to strengthen security defenses. Encourage cybersecurity leaders to embed generative AI and automation into their tool kits to resolve security risks and incidents at speed and at scale. This will provide significant productivity gains and leverage cybersecurity as an enabler for business growth.

- **Use AI to speed up security outcomes.** Automate routine tasks that don't require human expertise and judgment. Use generative AI to streamline tasks that rely on the collaboration between humans and technology, such as security policy generation, threat hunting, and incident response.
- **Deploy AI to detect new threats.** Update tools and techniques to equip your teams with the same speed, scale, precision, and sophistication as your attackers. Use generative AI to identify patterns and anomalies faster, allowing teams to recognize new threat vectors before they disrupt the business.
- **Find strength in numbers.** Work with trusted partners to help define your AI security maturity and implement a comprehensive generative AI strategy that drives value across your organization.

# Generative AI can help scale sustainability—ushering in a new era of responsible growth.

At times, the climate crisis can seem insurmountable. As emissions targets are set, then missed, then set again, some are left wondering if anything can tip the scales. Add pollution, deforestation, and species loss to the list of environmental problems and the outlook for life on our planet becomes even more ominous.

Enter generative AI. With its whiz-kid capabilities, it can analyze environmental data in an instant, uncovering patterns that lead to game-changing insights. It can offer solutions to stubborn problems across the sustainability spectrum. It's no silver bullet, but if used strategically, generative AI could help companies achieve sustainability aspirations at scale.



As AI-first solutions inspire business model innovation, CEOs have a chance to center sustainability in a way that wasn't previously possible. Generative AI can optimize operations for both sustainability and profitability, helping leaders avoid suboptimal tradeoffs. It can explore new materials, simulate new designs, and evaluate product lifecycles in a fraction of the time, eliminating the costly process of trial-and-error.

Generative AI can also help make businesses more resource-efficient, reducing costs, emissions, and waste. For example, it can use data from energy grids, weather patterns, and usage trends to predict and adjust energy distribution in real time. This helps companies limit their carbon footprint while also boosting the bottom line, strengthening the business case for sustainability across the board.

In this environment, good intentions will no longer be good enough. With generative AI on the scene, CEOs can make the enterprise sustainable by design—not as an afterthought—and translate ideals and ambitions into the actionable strategies and measurable business results that stakeholders expect.

Chapter 12

**Sustainability +** generative AI

Old school  
sustainability  
is obsolete

**“I equate an efficient use of resources  
to being better for the environment  
and also better for customer service.”**

**Judy McReynolds**  
CEO of ArcBest

# Sustainability

We've identified **three things** CEOs need to know and do right now.

## 1. Strategy

What to know

Generative AI can help make ideals real.



What to do

Turn tradeoffs into win-wins.

## 2. Ecosystem

What to know

Sustainability is a team sport—and generative AI is a star player.



What to do

Make 1+1=3 with ecosystem partners.

## 3. Environment

What to know

Sustainable AI isn't a given.



What to do

Use generative AI to make a net positive impact.

What you need **to know**

## Generative AI can help make ideals real.

What will it take to bridge the gap between sustainability aspirations and action? This question has plagued CEOs for decades, as financial pressures have precluded progress toward many sustainability goals. Even today, while 86% of executives say their organization has a sustainability strategy in place, only 35% have acted on it.<sup>124</sup>

Integrating the principles of sustainability into the core business has been a key challenge. Recent IBM IBV research revealed that 72% of executives approach sustainability as a revenue enabler rather than a cost center.<sup>125</sup> Yet 64% think they must continue to make tradeoffs between financial performance and sustainability.<sup>126</sup> But now, generative AI has cast sustainability commitments in a new light.

Rather than existing on two sides of a great divide, sustainability and profitability goals have begun to merge. Generative AI, powered by transparent data, can help leaders turn intel into insights faster than ever, enabling businesses to hit both sustainability goals and financial targets with one strategic strike. For example, generative AI can analyze historical sales data, market trends, and other factors to predict future demand more accurately, helping companies optimize production levels, reduce overstock, and minimize waste.

Of course, generative AI can't do all of this on its own. It must be used as a complement to traditional AI, IoT, and other emerging tech. We've identified four pillars of success: data and ecosystems, digital technology, process and business integration, and skills and decision-making. Organizations with higher maturity in these areas are 43% more likely to outperform their peers on profitability—and 52% more likely to say their sustainability efforts drive profitability. Not coincidentally, they're also 33% more likely to use AI for sustainability reporting and performance.<sup>127</sup>

This data hints at generative AI's potential. Today, 61% of executives say generative AI will be important for their sustainability agenda and 69% of organizations plan to increase their investment in generative AI for sustainability.<sup>128</sup>

But will these investments deliver results—or are leaders chasing a mirage? That all depends on the data. Roughly three in four executives say manually processed data is holding back their sustainability reporting and performance efforts—and inadequate data is the top barrier to sustainability progress overall.<sup>129</sup> What's more, 83% agree that high-quality data and transparency are necessary to achieve sustainability objectives.<sup>130</sup>

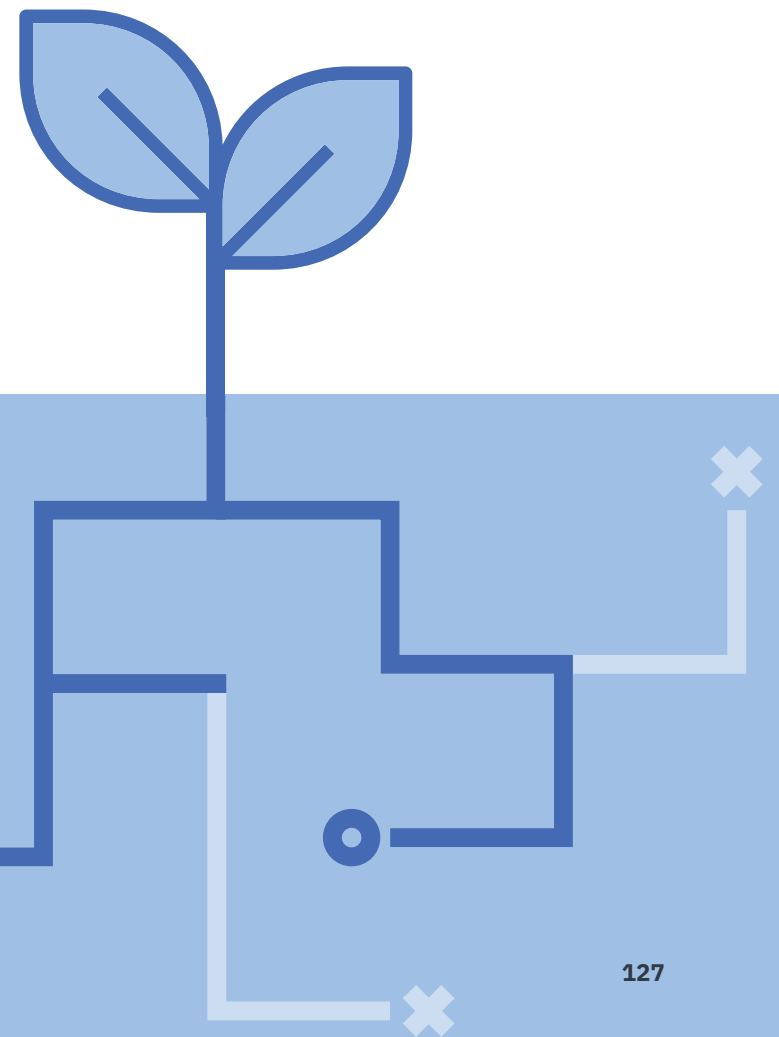
What you need **to do**

## Turn tradeoffs into win-wins.

Use generative AI to address key sustainability data gaps, make reporting processes more efficient, reduce risk, and comply with rapidly changing requirements. Tap data to find opportunities to automate processes, design products and services, cut energy costs, and limit resource consumption in a way that delivers positive sustainability outcomes *and* financial gains.

- **Drive sustainable business outcomes through dramatically improved insights.** Activate sustainability data and insights for improved performance across the enterprise and ecosystem, understanding where specific generative AI use cases add value or introduce risks. Use generative AI to find patterns that inform better pricing, budgeting, and incentive mechanisms based on sustainability metrics and data.
- **Embed sustainability across the enterprise.** Align sustainability, business, and AI strategies to avoid advancing generative AI in isolation. Integrate sustainability-driven generative AI initiatives into all business units and your corporate governance framework. Use generative AI to augment and enrich your sustainability data for reporting and operationalization of sustainability goals.
- **Innovate, don't replicate.** Use generative AI as a source of innovation for sustainability to change how things get done. Don't just automate existing, suboptimal processes and ways of working.

Executives are citing insufficient organizational readiness as the **#1 barrier** to using generative AI for sustainability.



“What has got to happen over the next 30 years is all of the primary gas and petroleum has got to be removed from [the] mix. At the same time, you’ve got to massively ramp up electricity production. Right now, *some of the big bottlenecks are areas where AI can help.*”

Michael Lewis  
CEO of Uniper

What you need **to know**

## Sustainability is a team sport—and generative AI is a star player.

No single organization can solve the world’s sustainability problems. Natural resources are shared across borders and boardrooms, and every organization plays its own role in conserving them for future generations.

Protecting the ecosystem takes an ecosystem—and every player is essential. AI experts, data scientists, environmental specialists, business strategists, and policymakers must all work in unison to develop and implement sustainability solutions.

The need for collaboration isn’t new, but generative AI has changed the game. Now that it’s on the roster, organizations can collaborate faster and more effectively. In fact, ecosystem collaboration is the top benefit executives expect from using generative AI for sustainability.<sup>131</sup> For example, generative AI can help manufacturers, material scientists, and consumer products companies develop more eco-friendly packaging by using desired properties and environmental criteria to suggest innovative compositions and designs.

Harnessing the power of advanced algorithms enables the entire ecosystem to make more sustainable game-time decisions. Organizations are assembling a new playbook in response, with 65% co-creating generative AI capabilities for sustainability with ecosystem partners or suppliers.<sup>132</sup>

What you need **to do**

## Make 1+1=3 with ecosystem partners.

Scale impact across the enterprise and through your ecosystem to pursue sustainability and profit as complementary business goals. Co-create generative AI capabilities with partners to limit environmental impact and advance sustainability initiatives.

- **Work with strategic ecosystem partners to drive greater impact.** Make partners integral to your sustainability data and generative AI efforts. Share sustainability data with partners for collaboration and co-creation.
- **Democratize, don’t centralize.** Give employees access to relevant sustainability data and AI capabilities. Empower them to adjust their daily tasks and decisions based on data-enabled insights. It is through thousands—or millions—of daily actions that an organization’s sustainability strategy is brought to life.
- **Upskill, don’t stand still.** Invest in people with the right mix of sustainability and generative AI skills as part of your business strategy. Use generative AI to educate employees about sustainability concepts.

What you need **to know**

## Sustainable AI isn't a given.

No path forward comes without pitfalls. As organizations leverage generative AI *en masse*, new sustainability concerns are coming to the forefront.

For example, generative AI is resource-hungry. Training one large language model (LLM) can consume a lot of water and emit a massive amount of CO<sub>2</sub>. Organizations can minimize impact by fine-tuning existing generative AI models rather than training new ones. For leaders planning ahead to limit generative AI's carbon footprint and water use, applying existing foundation models and reusing resources can be a valuable tactic.

Another way to limit the environmental impact of generative AI is to switch programming languages. This can reduce the energy consumption of an application by up to 50%.<sup>133</sup> Running workloads in a container platform instead of in a classically deployed virtual machine environment can also cut annual infrastructure costs by 75% thanks, in part, to increased energy efficiency.<sup>134</sup>

For its part, generative AI can take these sustainability strategies to the next level. Rather than just switching code, it can develop more energy-efficient algorithms and software by analyzing code performance. It can also identify which workloads can be most efficiently containerized—and rethink the entire data center, designing and optimizing layouts, cooling systems, and server configurations to minimize energy consumption.

Generative AI can even investigate itself to find new ways to limit its impact—but it needs human minds to light the way. Partnering with research institutions, technology providers, and other businesses to share knowledge, resources, and best practices can help organizations use generative AI to advance their sustainability strategies without blowing past carbon caps.

Generative AI amplifies some of the risks of traditional AI, and its use in domains such as sustainability reporting needs to be tightly governed. But executives aren't sure their teams have been properly conditioned, citing insufficient organizational readiness as the top barrier to using generative AI for sustainability.<sup>135</sup>







What you need **to do**

### Use generative AI to make a net positive impact.

Minimize the environmental impact of generative AI by building on existing foundation models rather than starting from scratch. Use generative AI to create better code with lower environmental impact and redesign data centers to consider sustainability.

- **Recalibrate your approach to generative AI.** Make your generative AI capabilities more sustainable before they become more pervasive. Upgrade and fine-tune existing models as much as possible. Use less energy-intensive computational methods.
- **Design IT for sustainability.** Monitor energy consumption, hardware utilization, and data storage to identify opportunities to become more energy efficient. Tap generative AI and hybrid cloud to limit your IT carbon footprint.
- **Don't take opportunistic shortcuts.** Put data governance in place to ensure the use of generative AI follows principles that advance sustainability and align with your organization's values.





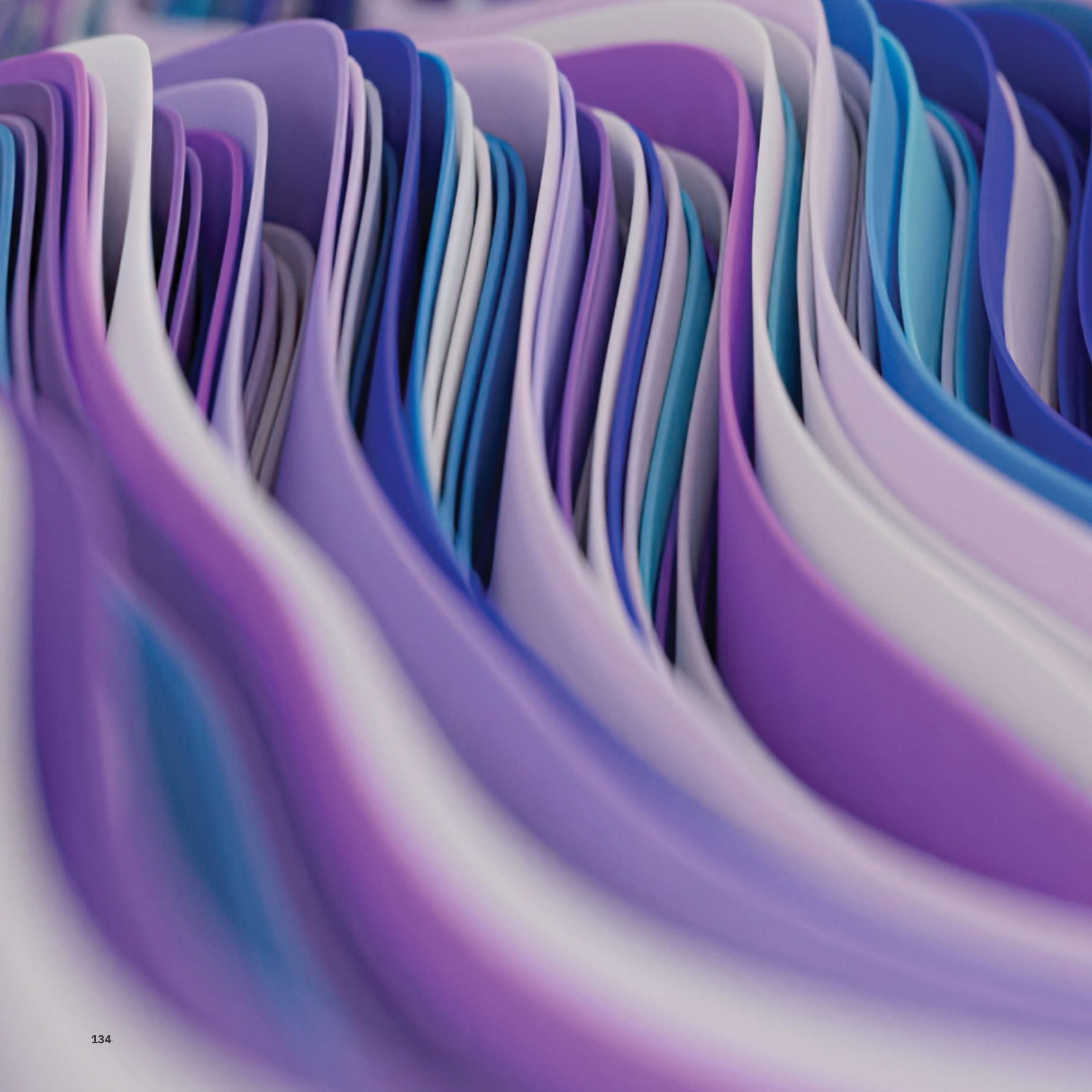
## Conclusion

# Lay the groundwork for greatness

Authority. Tenacity. Resolve. As we said at the outset, these are the leadership fundamentals needed for any successful transformation. Then we showed you how to apply these skills to grow AI-enabled people, develop AI-fueled operations, and leverage AI-powered data and technology.

Now it's up to you. Don't let others control what defines and differentiates your organization. Pilot your use cases and scale quickly and responsibly.

But no organization can do it alone. At IBM, we're tapping decades of experience in creating technologies and driving enterprise transformation to help our clients navigate the unknown. Let's create what's next together. Future chapters are ours to write.



## Notes and sources

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### Introduction

Leadership can't be automated

- 1 *Enterprise generative AI: State of the market.* IBM Institute for Business Value. July 2023. <https://ibm.co/enterprise-generative-ai>
- 2 2023 IBM Institute for Business Value generative AI CEO pulse survey. 200 US CEOs. April/May 2023.
- 3 2023 IBM Institute for Business Value generative AI open innovation pulse survey. 315 global CxOs. May/June 2023.
- 4 Goldstein, Jill, Bill Lobig, Cathy Fillare, and Christopher Nowak. *Augmented work for an automated, AI-driven world: Boost performance with human-machine partnerships.* IBM Institute for Business Value. August 2023. <https://ibm.co/augmented-workforce>

---

### Section 1

AI-enabled people

#### Chapter 1 Talent and skills

- 5 Goldstein, Jill, Bill Lobig, Cathy Fillare, and Christopher Nowak. *Augmented work for an automated, AI-driven world: Boost performance with human-machine partnerships.* IBM Institute for Business Value. August 2023. <https://ibm.co/augmented-workforce>
- 6 IBM Institute for Business Value generative AI state of the market survey. 369 global CxOs. April/May 2023.
- 7 *The 2023 CEO Study. CEO decision-making in the age of AI: Act with intention.* IBM Institute for Business Value. June 2023. <https://ibm.co/c-suite-study-ceo>
- 8 Goldstein, Jill, Bill Lobig, Cathy Fillare, and Christopher Nowak. *Augmented work for an automated, AI-driven world: Boost performance with human-machine partnerships.* IBM Institute for Business Value. August 2023. <https://ibm.co/augmented-workforce>
- 9 2023 IBM Institute for Business Value generative AI impact on labor pulse survey. 300 US CxOs. May/June 2023.

#### Chapter 2 Customer service

- 10 IBM Institute for Business Value generative AI state of the market survey. 369 global CxOs. April/May 2023.
- 11 2023 IBM Institute for Business Value generative AI CEO pulse survey. 200 US CEOs. April/May 2023.
- 12 2023 IBM Institute for Business Value customer service benchmarking survey. 108 customer service executives. July 2023.
- 13 Ibid.
- 14 Ibid.
- 15 Ibid.
- 16 Ibid.
- 17 Ibid.

#### Chapter 3 Customer and employee experience

- 18 2023 IBM Institute for Business Value next-gen design survey. 212 global CxOs. July 2023.
- 19 Ibid.
- 20 Ibid.
- 21 Ibid.
- 22 Ibid.
- 23 Ibid.
- 24 2023 IBM Institute for Business Value generative AI state of the market survey. 369 global CxOs. April/May 2023.
- 25 2023 IBM Institute for Business Value next-gen design survey. 212 global CxOs. July 2023.
- 26 2023 IBM Institute for Business Value generative AI impact on labor pulse survey. 300 US CxOs. May/June 2023.
- 27 Ibid.
- 28 Ibid.
- 29 2023 IBM Institute for Business Value next-gen design survey. 212 global CxOs. July 2023.
- 30 IBM Institute for Business Value global employee survey. 21,056 global employees. December 2022/January 2023.
- 31 Ibid.
- 32 *The 2023 CEO Study. CEO decision-making in the age of AI: Act with intention.* IBM Institute for Business Value. June 2023. <https://ibm.co/c-suite-study-ceo>

## Notes and sources

---

### Section 2

AI-powered data and technology

#### Chapter 4 Platforms, data, and governance

- 33 Colback, Lucy. "The rise of the platform economy." *Financial Times*. March 13, 2023. <https://www.ft.com/content/e5f5e5b9-3aec-439a-b917-7267a08d320f>
- 34 Ramamurthy, Shanker, John J. Duignan, Hans Tesselaar, Héctor Arias, and Paolo Sironi. *Embedded finance: Creating the everywhere, everyday bank*. IBM Institute for Business Value. September 2023. <https://ibm.co/embedded-finance>
- 35 *The Virtual Enterprise: The Cognitive Enterprise in a virtual world*. IBM Institute for Business Value. January 2022. Unpublished data. <https://ibm.co/virtual-enterprise>
- 36 *COVID-19 and the future of business: Executive epiphanies reveal post-pandemic opportunities*. IBM Institute for Business Value. September 2020. <https://ibm.co/covid-19-future-business>
- 37 Yoffie, David B., Annabelle Gawer, and Michael A. Cusumano. "A Study of More Than 250 Platforms Reveals Why Most Fail." *Harvard Business Review*. May 29, 2019. <https://hbr.org/2019/05/a-study-of-more-than-250-platforms-reveals-why-most-fail>
- 38 2023 IBM Institute for Business Value generative AI CEO pulse survey. 200 US CEOs. April/May 2023.
- 39 Ashoori, Maryam, Brian Goehring, Timothy Humphrey, Mahmoud Naghshineh, and Cathy Rodenbeck Reese. *Generating ROI with AI: Six capabilities that drive world-class results*. IBM Institute for Business Value. August 2023. <https://ibm.co/ai-capabilities>
- 40 2023 IBM Institute for Business Value generative AI CEO pulse survey. 200 US CEOs. April/May 2023.
- 41 2023 IBM Institute for Business Value generative AI open innovation pulse survey. 315 global CxOs. May/June 2023.
- 42 *The 2023 CDO Study. Turning data into value: How top Chief Data Officers deliver outsize results while spending less*. IBM Institute for Business Value. March 2023. <https://ibm.co/c-suite-study-cdo>
- 43 2023 IBM Institute for Business Value generative AI CEO pulse survey. 200 US CEOs. April/May 2023.
- 44 Ashoori, Maryam, Brian Goehring, Timothy Humphrey, Mahmoud Naghshineh, and Cathy Rodenbeck Reese. *Generating ROI with AI: Six capabilities that drive world-class results*. IBM Institute for Business Value. August 2023. <https://ibm.co/ai-capabilities>

#### Chapter 5 Open innovation and ecosystems

- 45 Payraudeau, Jean-Stéphane, Jacob Dencik, and Anthony Marshall. *Extending digital acceleration: Unleashing the business value of technology investments*. IBM Institute for Business Value. October 2021. <https://ibm.co/extending-digital-acceleration>
- 46 *The 2023 CEO Study. CEO decision-making in the age of AI: Act with intention*. IBM Institute for Business Value. June 2023. <https://ibm.co/c-suite-study-ceo>; 2023 IBM Institute for Business Value generative AI open innovation pulse survey. 315 global CxOs. May/June 2023.
- 47 2023 IBM Institute for Business Value generative AI impact on labor pulse survey. 300 US CxOs. May/June 2023.
- 48 2023 IBM Institute for Business Value generative AI open innovation pulse survey. 315 global CxOs. May/June 2023.
- 49 Ibid.
- 50 2023 IBM Institute for Business Value generative AI open innovation pulse survey. 315 global CxOs. May/June 2023.
- 51 Ibid.
- 52 Ibid.
- 53 2023 IBM Institute for Business Value generative AI impact on labor pulse survey. 300 US CxOs. May/June 2023.
- 54 2023 IBM Institute for Business Value generative AI open innovation pulse survey. 315 global CxOs. May/June 2023.

#### Chapter 6 Application modernization

- 55 2023 IBM Institute for Business Value generative AI application modernization pulse survey. 216 US CIO/CTOs. July/August 2023.
- 56 *The 2021 CEO Study. Find your essential: How to thrive in a post-pandemic reality*. IBM Institute for Business Value. February 2021. Unpublished data. <https://ibm.co/c-suite-study-ceo>
- 57 2023 IBM Institute for Business Value generative AI application modernization pulse survey. 216 US CIO/CTOs. July/August 2023.

- 58 Sharma, Aparna, Arnab Bag, and Smitha Soman. *Modernizing applications on hybrid cloud: Essentials to accelerate digital transformation*. IBM Institute for Business Value. June 2023. <https://ibm.co/application-modernization-hybrid-cloud>
- 59 Ibid.
- 60 2023 IBM Institute for Business Value generative AI application modernization pulse survey. 216 US CIO/CTOs. July/August 2023.
- 61 Sharma, Aparna, Arnab Bag, and Smitha Soman. *Modernizing applications on hybrid cloud: Essentials to accelerate digital transformation*. IBM Institute for Business Value. June 2023. <https://ibm.co/application-modernization-hybrid-cloud>
- 62 2023 IBM Institute for Business Value generative AI application modernization pulse survey. 216 US CIO/CTOs. July/August 2023.
- 63 Ibid.
- 64 Ibid.
- 65 IBM Institute for Business Value AI and automation survey. 2,000 global CxOs. April-July 2023.
- 66 2023 IBM Institute for Business Value generative AI application modernization pulse survey. 216 US CIO/CTOs. July/August 2023.

#### Chapter 7 Responsible AI and ethics

- 67 2023 IBM Institute for Business Value generative AI impact on hybrid cloud pulse survey. 414 US CxOs. May/June 2023.
- 68 Goehring, Brian, Francesca Rossi, and Beth Rudden. *AI ethics in action: An enterprise guide to progressing trustworthy AI*. IBM Institute for Business Value. April 2022. Published and unpublished data. <https://ibm.co/ai-ethics-action>
- 69 Ibid.
- 70 Ibid.
- 71 *CISCO 2022 Consumer Privacy Survey*. Cisco. Accessed February 9, 2023. [https://www.cisco.com/c/dam/en\\_us/about/doing\\_business/trust-center/docs/cisco-consumer-privacy-survey-2022.pdf](https://www.cisco.com/c/dam/en_us/about/doing_business/trust-center/docs/cisco-consumer-privacy-survey-2022.pdf)
- 72 Goehring, Brian, Francesca Rossi, and Beth Rudden. *AI ethics in action: An enterprise guide to progressing trustworthy AI*. IBM Institute for Business Value. April 2022. <https://ibm.co/ai-ethics-action>
- 73 *The 2023 CEO Study. CEO decision-making in the age of AI: Act with intention*. IBM Institute for Business Value. June 2023. <https://ibm.co/c-suite-study-ceo>

- 74 Cheung, Jane, Catherine Fillare, Cristene-Gonzalez-Wertz, Christopher Nowak, Gillian Orrell, and Steve Peterson. *Balancing sustainability and profitability: How businesses can protect people, planet, and the bottom line*. IBM Institute for Business Value. April 2022. Unpublished data. <https://ibm.co/2022-sustainability-consumer-research>
- 75 *The 2023 CDO Study. Turning data into value: How top Chief Data Officers deliver outsize results while spending less*. IBM Institute for Business Value. March 2023. <https://ibm.co/c-suite-study-cdo>
- 76 2023 IBM Institute for Business Value generative AI integrity and compliance pulse survey. 200 US CxOs. September 2023.
- 77 *The 2023 CEO Study. CEO decision-making in the age of AI: Act with intention*. IBM Institute for Business Value. June 2023. <https://ibm.co/c-suite-study-ceo>
- 78 2023 IBM Institute for Business Value generative AI impact on labor pulse survey. 300 US CxOs. May/June 2023.
- 79 Goehring, Brian, Francesca Rossi, and Beth Rudden. *AI ethics in action: An enterprise guide to progressing trustworthy AI*. IBM Institute for Business Value. April 2022. <https://ibm.co/ai-ethics-action>
- 80 2023 IBM Institute for Business Value generative AI integrity and compliance pulse survey. 200 US CxOs. September 2023.

#### Chapter 8 Tech spend

- 81 2023 IBM Institute for Business Value generative AI state of the market survey. 369 global CxOs. April/May 2023; 2023 IBM Institute for Business Value generative AI tech spending pulse survey. 136 US CIO/CTOs. August/September 2023.
- 82 2023 IBM Institute for Business Value generative AI tech spending pulse survey. 136 US CIO/CTOs. August/September 2023.
- 83 Cutter, Chip. "The \$900,000 AI job is here." *The Wall Street Journal*. August 14, 2023. <https://www.wsj.com/articles/artificial-intelligence-jobs-pay-netflix-walmart-230fc3cb>
- 84 2023 IBM Institute for Business Value generative AI tech spending pulse survey. 136 US CIO/CTOs. August/September 2023.
- 85 *The 2023 CEO Study. CEO decision-making in the age of AI: Act with intention*. IBM Institute for Business Value. June 2023. <https://ibm.co/c-suite-study-ceo>
- 86 2023 IBM Institute for Business Value generative AI tech spending pulse survey. 136 US CIO/CTOs. August/September 2023.
- 87 Ibid.

## Notes and sources

---

### Section 3

#### AI-fueled operations

#### Chapter 9 Supply chain

- 88 2023 IBM Institute for Business Value AI and automation survey. 2,000 global CxOs. April-July 2023.
- 89 Ibid.
- 90 Ibid.
- 91 2023 IBM Institute for Business Value generative AI supply chain pulse survey. 200 US CSCO/COOs. September/October 2023.
- 92 2023 IBM Institute for Business Value AI and automation survey. 2,000 global CxOs. April-July 2023.
- 93 2023 IBM Institute for Business Value generative AI supply chain pulse survey. 200 US CSCO/COOs. September/October 2023.
- 94 2023 IBM Institute for Business Value AI and automation survey. 2,000 global CxOs. April-July 2023.
- 95 2023 IBM Institute for Business Value generative AI supply chain pulse survey. 200 US CSCO/COOs. September/October 2023.
- 96 2023 IBM Institute for Business Value AI and automation survey. 2,000 global CxOs. April-July 2023.
- 97 2023 IBM Institute for Business Value generative AI supply chain pulse survey. 200 US CSCO/COOs. September/October 2023.
- 98 Ibid.
- 99 Ibid.
- 100 Ibid.
- 101 Ibid.

#### Chapter 10 Marketing

- 102 2023 IBM Institute for Business Value generative AI marketing pulse survey. 110 US CMOs. September/October 2023.
- 103 Ibid.
- 104 2023 IBM Institute for Business Value generative AI impact on labor pulse survey. 300 US CxOs. May/June 2023.
- 105 “How to revive collaboration at work.” *Masters of Scale: Cultivate the Entrepreneurial Mindset*. Accessed October 13, 2023. <https://mastersofscale.com/how-to-revive-collaboration-at-work/>
- 106 2023 IBM Institute for Business Value generative AI marketing pulse survey. 110 US CMOs. September/October 2023.
- 107 Ibid.
- 108 Ibid.
- 109 Ibid.
- 110 Ibid.
- 111 Ibid.

#### Chapter 11 Cybersecurity

- 112 2023 IBM Institute for Business Value generative AI impact on hybrid cloud pulse survey. 414 US CxOs. May/June 2023.
- 113 2023 IBM Institute for Business Value generative AI security pulse survey. 200 US CxOs. September/October 2023.
- 114 2023 IBM Institute for Business Value generative AI integrity and compliance pulse survey. 200 US CxOs. September 2023.
- 115 *Cost of a data breach 2023*. IBM Security and the Ponemon Institute. July 2023. <https://www.ibm.com/reports/data-breach>
- 116 2023 IBM Institute for Business Value generative AI security pulse survey. 200 US CxOs. September/October 2023.
- 117 2023 IBM Institute for Business Value generative AI impact on hybrid cloud pulse survey. 414 US CxOs. May/June 2023.
- 118 2023 IBM Institute for Business Value generative AI security pulse survey. 200 US CxOs. September/October 2023.
- 119 Ibid.



- 120 2023 IBM Institute for Business Value generative AI security pulse survey. 200 US CxOs. September/October 2023; 2023 IBM Institute for Business Value generative AI impact on labor pulse survey. 300 US CxOs. May/June 2023.
- 121 2023 IBM Institute for Business Value generative AI security pulse survey. 200 US CxOs. September/October 2023.
- 122 Lipp, Anthony, Anthony Marshall, and Jacob Dencik. *Open the door to open innovation: Realizing the value of ecosystem collaboration*. IBM Institute for Business Value. December 2021. <https://ibm.co/open-innovation>
- 123 2023 IBM Institute for Business Value generative AI impact on hybrid cloud pulse survey. 414 US CxOs. May/June 2023.

## Chapter 12 Sustainability

- 124 Balta, Wayne, Manish Chawla, Jacob Dencik, and Spencer Lin. *Sustainability as a transformation catalyst: Trailblazers turn aspiration into action*. IBM Institute for Business Value. January 2022. <https://ibm.co/sustainability-transformation>
- 125 Biswas, Arun, Elisabeth Goos, and Jacob Dencik. *The ESG data conundrum*. IBM Institute for Business Value. April 2023. <https://ibm.co/esg-data-conundrum>
- 126 2023 IBM Institute for Business Value operationalizing sustainability survey. Preliminary data. 500 global CxOs. August 2023.
- 127 Biswas, Arun, Elisabeth Goos, and Jacob Dencik. *The ESG data conundrum*. IBM Institute for Business Value. April 2023. <https://ibm.co/esg-data-conundrum>
- 128 2023 IBM Institute for Business Value operationalizing sustainability survey. Preliminary data. 500 global CxOs. August 2023.
- 129 Biswas, Arun, Elisabeth Goos, and Jacob Dencik. *The ESG data conundrum*. IBM Institute for Business Value. April 2023. <https://ibm.co/esg-data-conundrum>
- 130 2023 IBM Institute for Business Value operationalizing sustainability survey. Preliminary data. 500 global CxOs. August 2023.
- 131 Ibid.
- 132 Ibid.
- 133 Roy, Sreejit, Diptiman Dasgupta, and Charbak Roy. *IT sustainability beyond the data center: Decarbonizing with hybrid cloud*. IBM Institute for Business Value. May 2022. <https://ibm.co/it-sustainability>
- 134 Ibid.
- 135 2023 IBM Institute for Business Value operationalizing sustainability survey. Preliminary data. 500 global CxOs. August 2023.

# Contributors



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**Guide to Generative AI**

What you need to know and do to win  
with transformative technology



#### Executive publishers

Cindy Anderson and Anthony Marshall

#### Executive editor

Tegan Jones

#### Lead designer

Angela Finley

#### Project management

Amanda Drouin, Rachel Larkin, and Kristine Lawas

#### Engagement, marketing, communications, and promotion

Kira Arnise, Annette Celio, William Chamberlin, Marisa Conway, Talita Cristina Paro Fabene, Karen Feldman, Kristin Fletcher, Jeremy Hodge, Bruce Jarvis, Kristina Laova, Claudia Maseo, Michelle Mattelson, Benjamin Montague, Jamee Nelson, Steve Ollice, Aliye Ozcan, Joe Rivas, Kristil Robarts, Bob Safian, Christine Selph, Mya Singleton, EJ Sussman, and Teresa Yoo

#### IBM IBV research

Namit Agrawal, Carolyn Baird, Steven E. Ballou, Christian Bieck, Karen Butner, Liam Cleaver, Haynes Cooney, Jacob Dencik, Cathy Fillare, Brian Goehring, Kathleen Martin, Hebatallah Nashaat, Christopher Nowak, Gerald Parham, Lily Patel, Thiago Sartori, Raj Rohit Singh, and Richard Warrick

#### Subject-matter experts

Oday Abbosh, Justin Ablett, Faye Abloeser, Dimple Ahluwalia, Aankur Bhatia, Varun Bijlani, Arun Biswas, Phaedra Boinodiris, Elizabeth Brophy, Matthew Candy, Tarun Chopra, Rob Cushman, Edan Dionne, Ryan Dougherty, Glenn Finch, Jennifer Fitzgerald, Jason Flood, Heather Gentile, Tony Giordano, Jill Goldstein, Elisabeth Goos, Kevin Gray, Nick Holda, Jason Kelley, Jennifer Kirkwood, AB Vijay Kumar, Bill Lobig, Jesús Mantas, Scott McCarthy, George Mina, Parul Mishra, Christina Montgomery, Debbie Taylor Moore, Kim Morick, Dinesh Nagarajan, Mary O'Brien, Keri Olson, Romas Pencyla, Linda Perry-Lube, Georgia Prassinios, Charles Quincy, Jennifer Quinlan, J.R. Rao, Francesca Rossi, Sreejit Roy, Christina Shim, Kevin Skapinetz, Baan Slavens, Brent Smolinski, William Streit, Shue-Jane Thompson, Jay Trestain, Srinivas Tummalapenta, Elizabeth Urheim, Susan Wedge, Jonathan Wright, Kate Woolley, and Alexis Zamkow

#### Tech development team, editorial, and design support

Sara Aboulhosn, James Albaran, Matt Alderton, Valentin Alecu, Kristin Biron, Rodelyn Broñola-Solis, Han-Chia Chen, Enrique Gaona, Benjamin Hurte, Stewart Lacey, Rūta Laurikaitytė-Franckevičė, Arturas Luksas, Lukas Lysychas, Edmilton Malinao, Martynas Pažusis, Daritza Perez, Kristine Rodriguez, Nate Saenz, Arnas Šiaudvytis, Lucy Sieger, David Steinert, Andreea Stoi, Michael Tucker, Anne Marie Weber, Joanna Wilkins, Andrew Womack, and Aurimas Žedelis

## Research methodology

The data points in this book are based on primary data collection by the IBM IBV, in cooperation with Oxford Economics, fielded mostly in 2023. We surveyed nearly 6,000 executives, including CEOs and other members of the C-suite, on the generative AI topics covered in this book.

Specifically, these surveys are:

- 2023 IBM IBV CEO Study survey, 3,000 global CEOs, February/March/April 2023
- 2023 IBM IBV generative AI CEO pulse survey, 200 US CEOs, April/May 2023
- 2023 IBM IBV generative AI state of the market survey, 369 global CxOs, April/May 2023
- 2023 IBM IBV generative AI impact on labor pulse survey, 300 US CxOs, May/June 2023
- 2023 IBM IBV generative AI open innovation pulse survey, 315 global CxOs, May/June 2023
- 2023 IBM IBV generative AI impact on hybrid cloud pulse survey, 414 US CxOs, May/June 2023
- 2023 IBM IBV generative AI application modernization pulse survey, 216 US CIO/CTOs, July/August 2023
- 2023 IBM IBV generative AI tech spending pulse survey, 136 US CIO/CTOs, August/September 2023
- 2023 IBM IBV generative AI integrity and compliance pulse survey, 200 US CxOs, September 2023
- 2023 IBM IBV generative AI security pulse survey, 200 US CxOs, September/October 2023
- 2023 IBM IBV generative AI supply chain pulse survey, 200 US CSCO/COOs, September/October 2023
- 2023 IBM IBV generative AI marketing pulse survey, 110 US CMOs, September/October 2023

In September and October 2023, IBM IBV and Oxford Economics also conducted a series of deep-dive interviews with CEOs of organizations in the vanguard of generative AI thinking and adoption, allowing us to validate the insights discussed in this book with hands-on CEO experiences.

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